Latinx Adults and the COVID-19 Pandemic in the United States: Evaluating a COVID-19 Knowledge Test—and Identifying Predictors of High Knowledge and Self-Efficacy for COVID-19 Risk Reduction Behaviors

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Abstract

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Latinx communities in the United States made up 18% of the total population, yet accounted for 33% of COVID-19 morbidity and mortality. This supported the study aim to increase Latinx COVID-19 knowledge and self-efficacy for performing COVID-19 risk reduction mitigation behaviors via dissemination of the new online e-health intervention of the "Our COVID-19 Knowledge Test."

The study recruited online a largely female Latinx adult sample (N=118) with 68.6% born in the U.S. that was well-educated, given a mean education level of a bachelor's degree; and, a mean annual household income of $50,000 to $99,000. During the pandemic year of 2020, 46.5% experienced moderate to maximum/extreme cultural stress, and moderately high COVID-19 related stress—while 66.9% reported depression, 78.8% anxiety, and 45.2% trauma. Their high rates of COVID-19 depression and anxiety were more than double those rates reported across samples identified globally during the pandemic. They experienced significant declines in their self-rated mental health status and physical health status from pre-pandemic to during the pandemic, high social support, and closest to a good quality of life.

Supporting the value of the new "Our COVID-19 Knowledge Test" as a brief online e-health intervention, paired t-tests showed statistically significant increases in self-ratings for both *COVID-19 knowledge* and *self-efficacy for COVID-19 risk reduction behaviors* after taking the True-False test. Participants endorsed the dissemination of the new True-False "Our COVID-19 Knowledge Test" with all True answers as a brief online e-health intervention they would recommend to others as a way to learn about COVID-19. Meanwhile, on this True-False test, the sample evidenced very high knowledge of COVID-19. The sample also had a high intention to vaccinate or already vaccinated at 87%.

Findings from independent t-tests, Pearson correlations, and regression analyses collectively affirmed the critical importance of having both high knowledge and high self-efficacy for performing preventive behaviors for reducing the risk of COVID-19 transmission, implementing mitigation strategies, and reducing mortality. Implications and recommendations focused on the value of the genre of a True-False test, with all True answers, for disseminating evidence-based information, and countering misinformation during pandemics and public health crises. Finally, the short tools used in this study were recommended for application in future research and as screening tools.

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Chapter 1: Introduction

As per Roozenbeek et al. (2020), "the first human infection with the SARS CoV-2 novel coronavirus (COVID-19) was reported in December 2019 in Wuhan, China" (p. 1). Only three months had passed and COVID-19 had spread around the world, "igniting a global public health emergency" (p. 1). The United States declared a national emergency on March 13, 2020, given how COVID-19 had swiftly spread to 49 states (Tanne et al., 2020). By March 23, 2020 more than 351,171 cases were confirmed worldwide with 15,374 deaths reported (Johns Hopkins Coronavirus Resource Center, 2020).

Consistent with the recognition that COVID-19 was a pandemic, the Trump Administration "announced $50 billion to help combat the virus, as well as powers to waive laws and restrictions to make care more available" (p. 1). This included providing health care "through telehealth and allowing doctors" to practice in states in which they were not licensed to practice. The unfolding of the government response in the United States included sharp criticisms of the administration's response—with many states complaining "about a lack of coordinated national response and confused messaging from the White House"—having huge impacts across the country (Tanne et al., 2020, p. 1).

According to the American Medical Association (AMA, 2020), Latinx communities in the United States make up 18% of the population, but accounted for 33% of the COVID-19 cases, "revealing the disproportionate toll on the community" (p. 2). For example, in New York State, "Latinx account for 19.2% of the state population," yet they accounted for above one-third (34%) of fatalities across the state (p. 2). Meanwhile, nationwide, there was the problem of a "lack of consistent and reliable reporting of Latinx ethnic data for testing and fatalities"—which

effectively concealed the “true magnitude of COVID-19 on the Latinx community” (AMA, 2020, p. 2).

Fortuna et al. (2020) acknowledged how the Hispanic community had historically been hurt, and continually suffers by being the "most disenfranchised among the U.S. population who are disproportionately harmed physically, emotionally, economically, and educationally" (p. 443). COVID-19 had become another profound, intolerable tragedy for this population; and, moving forward, solutions to address such widespread discrimination at every societal level must be found. Evidence showed that it “is highly likely that preexisting inequities are at the root of the disproportionate impact of the COVID-19 epidemic on racial-ethnic minorities in the United States" (Fortuna et al., 2020, p. 443).

Subgroups have also been most negatively impacted by COVID-19 (Garcia et al., 2021). Within the COVID-19 pandemic, Garcia et al. discovered that among older adults, “Blacks and Latinxs have death rates approximately 3 and 2 times higher than Whites” (Garcia et al., 2021, p. 76). Longstanding inequities unethically and systemically continue to “shape the distribution of risks and resources for health, resulting in the social and spatial clustering of epidemic diseases” (Gravlee, 2020, p. 2).

Social Determinants, Health Disparities, and Racial Biases

Social determinants of health inequities have exacerbated COVID-19 morbidity and mortality in Latinx populations (Singu et al., 2020). It has long been understood how societal inequities in “place”—or where one lives—serve to disadvantage minorities, such as immigrants seeking asylum, the poor, women, the disabled, and ethnic/racial minority group members (Braveman & Gruskin, 2003). These factors further complicate and detract from health status and overall welfare (Braveman & Gruskin, 2003). Also long recognized is how discrimination,

and a lack of fairness and inequities that pervade the whole of life are fundamentally imbedded within society and a human being (Israel et al., 1998). Structurally, social determinants of health must be taken into greater account (Israel et al., 1998). An assessment remains needed of national and international policies that have been serving to lead communities further away from social justice in health (Braveman & Gottlieb, 2014).

Regarding yet other factors likely operating in the pandemic, Yu et al. (2021) suggested that potential "racial biases in medical treatment at hospitals and clinics may be relevant" in the higher Latinx morbidity and mortality rates (p. 1). Also addressed was the suggestion to focus on "two central aspects of this inequality" (p. 1). Specifically, these factors were identified as "systemic racism (racial residential segregation) and social class disparity (income inequality), which are inherently related" (Yu et al., 2021, p. 1).

Cannon (2020) asserted that the COVID-19 "virus itself may not discriminate, but long-standing inequality and structural racism in the United States have created the conditions that have allowed COVID to disproportionately ravage communities of color" (p. 204). Further, the real underlying condition has been described as injustice. The lack of access to healthcare and adequate, valid, reliable health information is considered injustice. Racial and ethnic inequality means continuing health disparities in historically underrepresented minorities in the United States. This has led to a lack of access to health information, opportunity and higher death rates among communities in need (p. 204). The call for an awareness of the roots of discrimination has been critical. Discrimination has been identified as a leading factor in health disparities and the higher morbidity and mortality in Latinx persons (Cannon, 2020).

There have been long-standing health disparities that the COVID-19 pandemic has served to bring to light—as with the disproportionately higher levels of morbidity and mortality among

Latinx communities, which was cited a decade ago by others (e.g., Gee & Ford, 2011). These disproportionate levels of morbidity and mortality have existed as a result of historical and structural racism. These factors involve "macro level systems, social forces, institutions, ideologies, and processes that interact with one another to generate and reinforce inequities among racial and ethnic groups" (Gee & Ford, 2011, p. 116).

Clay et al. (2021) identified multiple factors that appeared to be operating during the COVID-19 pandemic, which seemed to be contributing to higher rates of morbidity and mortality for the Latinx. What was discovered as contributing to health disparities included a higher proportion of Latinx individuals reporting significant challenges involving accessibility issues (e.g., telephone). The Latinx also faced significantly longer wait times to see providers, as well as the problem of closed health facilities in their communities, in comparison to other groups. Also identified were affordability issues, as the Latinx reported concern and worrying about their ability to pay for services when seeking to access health care, in comparison to other groups. These factors led to Latinx being more vulnerable to morbidity and mortality from COVID-19, as serious factors needing to be addressed and corrected (Clay et al., 2021).

Disparities in Exposure

Gould and Shierholz (2020) reported that Hispanic communities' essential workers do not have the luxury of working from home: they, therefore, have more exposure to COVID-19. Not all share the luxury of being able to work from home. It was found that less than one in six workers have the ability to work from home (The Bureau of Labor Statistics, 2019).

Williams et al. (2020) reported that Blacks and Hispanics were more likely to be employed as essential workers, because many worked in high-contact labor, as well as in the health care and food service industries. As a result, such essential workers have been working throughout the entire COVID-19 pandemic These essential workers have often worked without

adequate personal protection equipment or PPE throughout the pandemic, resulting in exposure (Williams et al., 2020).

Quandt et al. (2020) discussed how undocumented immigrant farm workers, also considered essential workers, were unable to stay at home during the COVID-19 pandemic. They were "excluded from the social safety net provided by the Coronavirus Aid, Relief and Economic Security (CARES) Act" (p. 1). These essential farmworkers urgently needed access to "knowledge and preventive behaviors" that were important "to reduce COVID-19 spread in the community" (p. 1). A telephone survey was used to assess knowledge of critical behaviors needed to protect their health. Some 67 families with at least one farmworker, and 38 similar families with no farmworkers in North Carolina were called for survey administration. The phone survey assessed their "knowledge of COVID-19, perceptions of its severity, self-efficacy, and preventive behaviors" (p. 4). Knowledge of COVID-19 and prevention methods was high in both the group with a farmworker in the family and the group without a farmworker, as was the perceived severity of COVID-19. Results found that, despite both high levels of knowledge and the perceived danger of COVID-19, the immigrant families in North Carolina were engaged in frequent interpersonal contacts that could, nonetheless, expose community members and themselves to COVID-19 (Quandt et al., 2020).

Chang et al. (2021) discussed how COVID-19 had revealed health care disparities in minority groups, including Hispanic populations. Counties with more monolingual Spanish speakers, higher unemployment rates, and air pollution were associated with higher rates of COVID-19 cases (Chang et al., 2021, p. 1).

Polyakova et al. (2021) also focused on COVID-19 health disparities among racial and ethnic minorities in America, citing mortality statistics, which clearly indicated how the impact of COVID-19 had been unequal and unfair. What emerged was a much-needed emphasis on

creating policy that was fair and that treated minority groups equally. Further, different social and environmental factors in society were discussed as associated with comorbidities in relation to COVID-19. It was deemed critically important to create health policy that would effectively serve to keep communities safe, thereby reducing disparities in exposure (Polyakova et al., 2021).

Misinformation and Media

It has been considered critical for communities to have access to valid and reliable sources of health information in order to be self-efficacious and take control of over their health (Braveman & Gottlieb, 2014). Such access to valid and evidence-based health information has not always existed.

The year 2020 was characterized by the U.S. government providing inconsistent and unscientific messaging during the COVID-19 pandemic (Tanne et al., 2020). American communities of color emerged even more distrustful of new vaccines for COVID-19, which were needed to mitigate the virus and the spread of COVID-19 (Tanne et al., 2020).

This pervasive reality led Roozenbeek et al. (2020) to conclude that "misinformation about the COVID-19 pandemic is a serious threat to both public health and international relations, ranging from the proliferation of damaging health advice, such as ingesting bleach, to politically motivated conspiracies about where the virus originated from" (p. 1). As a result, "the proliferation of false and misleading information about the virus, how it spreads, how to cure it and who is 'behind' it, has prompted the World Health Organization" to issue a warning. Specifically, they warned of "an ongoing 'infodemic'" (Roozenbeek et al., 2020, p. 1).

Pre-pandemic, Roozenbeek and Van Der Linden (2019) had noted how the current era was characterized by "the spread of false information" which had become synonymous with the use of the term "fake news" (p. 1). As a result, the "risk that fake news poses to evidence-based

decision making" was being increasingly acknowledged by governments (p. 1). This included "the spread of false information, particularly through social media and online networks" (Roozenbeek & Van Der Linden, 2020, p. 1).

Jaiswal et al. (2020) indicated that disinformation spread by some politically motivated media and public officials had also led to disproportionate rates of morbidity and mortality in some communities. For example, the resultant lack of access to valid health information was viewed as having translated into Latinx populations being "disproportionately affected by COVID-19 infection, morbidity, and mortality" (p. 2777). Also, the continuing mistrust that existed among communities that have been historically disenfranchised, and experienced structural and systemic racism, was identified as something that needed to be immediately addressed and corrected by public health experts. There was a call for the sharing of accurate knowledge and valid scientific information in order to "effectively address disinformation, misinformation and inequality-driven mistrust" that had become prevalent and encouraged by, and during, the 2020 Trump Administration COVID-19 pandemic (Jaiswal et al., 2020, p. 2778).

Cultural Stress, Anti-Immigration Stress, and Other Factors and Barriers

Vos et al. (2021) offered the concept of cultural stress. This can include "immigration-related stress," and stress from "language brokering," as well as "bicultural stress" (p. 218). Cultural stress also encompassed "worries surrounding documentation issues and fears of deportation" (p. 218). Such cultural stress was viewed as having become more prominent during an era of a rise in deportations and hate crimes toward Latinos (p. 218). Meanwhile, Vos et al. (2021) acknowledged their earlier work with colleagues in defining cultural stress, below:

> Schwartz et al. (2015) have grouped discrimination and negative context of reception, along with other similar experiences, under the heading of cultural stress. Broadly, cultural stress represents difficulties experienced as a direct result of one's ethnic or national background—and many cultural stressors occur as a direct result of xenophobic and defensive attitudes and policies on the part of the dominant ethnic group

> in the destination country (e.g., non-Hispanic White Americans in the U.S.). It is important to note that cultural stress is not an indictment of someone's heritage culture; rather, it represents the stressors felt by immigrant ethnic minorities because of their treatment by the majority culture…. (p. 218)

Anti-immigration policies have been recognized as a stressor for Latinx populations by others, as well. For example, the American Medical Association (AMA, 2020) focused on how at risk Latinx communities were more vulnerable to COVID19 due to many factors, including: a lack of vital health information; native language/communication barriers; anti-immigration policies; socioeconomic vulnerabilities and lack of access to care; lack of access to technology; historical disenfranchisement and racism; and biological predispositions to severe complications, including death, from COVID-19 (AMA, 2020, p. 4).

Despite the Affordable Care Act and availability of Medicaid, there were large numbers of undocumented Latinx who do did qualify for these programs; hence, almost one-third of the at-risk Latinx community was uninsured (AMA, 2020). Thus, "Latinx adults still experience the highest uninsured rate of any other racial/ethnic groups" in this country (p. 5). The aforementioned statistics exacerbated lack of access to critical healthcare, as a major reason why Latinx people constituted the "largest proportion of COVID-19 cases amongst minority and marginalized populations" (AMA, 2020, p. 7).

There were also barriers of access to care for those in rural areas. According to Cheng et al. (2020), Blacks and Hispanics in rural counties experienced higher daily morbidity and mortality rates than any of their other community counterparts. Evidence showed that "Blacks and Hispanics have suffered a disproportionate burden of COVID-19 in the United States" (p. 602). Sadly, "little attention has been paid to intersections between rurality and race/ethnicity in COVID-19 outcomes" (Cheng et al., 2020, p. 602).

In this same vein, Hennings-Smith (2019) reported that minorities accounted for 20% of the United States' rural population. However, these geographically isolated minorities face significant health challenges (Hennings-Smith, 2019).

Others focused on issues unique to illegal immigrants. Macias Gil et al. (2020) acknowledged the traditional cultural disenfranchisement of minorities and illegal immigrants in this country. They discussed how ethical dilemmas regarding high morbidity and mortality rates in Latinx epicenters arose because of the history of institutional oppression and continuous oppression at societal and institutional levels in this country. As a serious barrier, keeping Latinx communities adequately informed about reliable and valid health information, especially during a pandemic, was most challenging —especially against the backdrop of a long history of disenfranchisement of minorities and illegal immigrants (Macias Gil et al., 2020).

Statement of the Problem

The problem of vulnerable Latinx communities needing to be adequately informed with reliable and valid health information during the COVID-19 pandemic justified the need for the present research study. It was possible that making available an online source of evidence-based reliable information on COVID-19 would be of value to the Latinx population during the ongoing pandemic in the United States. The dissemination early in the year 2021 of "Our COVID-19 Knowledge Test" was viewed as potentially meeting the needs for evidence-based and reliable information at a critical time in what was the ongoing pandemic in the United States: i.e., the period of data collection from April 7, 2021 to May 8, 2021 when online dissemination and data collection occurred via this study.

Three Theories Justifying Addressing the Problem of Focus

The "Our COVID-19 Knowledge Test" may increase knowledge as a way to address the problem of vulnerable Latinx communities needing to be adequately informed with reliable and

valid health information. However, also relevant in addressing the identified problem is the theory of Bandura (1977) and the construct of self-efficacy. Self-efficacy involves an individual's level of confidence to perform specific behaviors in specific situations (Bandura, 1977). Hence, the study will investigate self-efficacy or level of confidence for performing behaviors for preventing COVID-19 transmission.

Regarding whether the study participants will recommend the new "Our COVID-19 Knowledge Test" to others, or engage in the diffusion of the innovation of a brief e-health intervention in the form of a true-false test (i.e., the "Our COVID-19 Knowledge Test"), there is the work of Rogers (1995). Specifically, Rogers provides the diffusion of innovations theory, wherein some may become early adopters of an innovation, including recommending the innovation to others. Meanwhile, the concept of innovating a brief e-health intervention in the form of a true-false test follows the prior work of others, which investigated whether participates would engage in diffusion of the innovation by recommending new e-health to others (i.e., Afram, 2019; Aiyedun, 2014; Williams-Gunpot, 2021).

The likelihood of study participants experiencing the stress of the COVID-19 pandemic—as well as potential cultural stress in this unprecedented year and era of increased immigration stress, deportations, and hate crimes against the Latinx population—suggests the value of social support theory. Social support theory further justifies a focus on the problem of Latinx communities being vulnerable at this time. As per Lakey and Cohen (2000), a stress and coping approach to social support theory holds the following: i.e. social support is hypothesized to reduce "the effects of stressful life events on health"—whether through the "supportive actions of others," or the "belief that support is available" (p. 30). Cohen et al. (2000) defined social support as "the resources that persons perceive to be available or that are actually provided

to them by nonprofessionals" such as via "informal helping relationships" (p. 4). One view is that social support serves as a stress buffer, while the perception of available social support may contribute to the appraisal of "potentially threatening situations as less stressful" (Lakey & Cohen, 2000, p. 30). The "stress-support matching hypothesis" holds that "social support will be effective in promoting coping and reducing the effects of a stressor, insofar as the form of assistance matches the demands of the stressor" (p. 31). Further, this view includes a focus on the provision of practical support to reduce stress, as in lending money, for example, or providing "actual assistance during stress" (p. 31). Also, the results of social support may be "beneficial to health and well-being" (Cohen et al., 2000, p. 4). Hence, at the time of a once-in-a century pandemic, the impact of the inherent stress may be buffered by social support, which may reduce the negative impact on health.

Purpose of the Study

The purpose of the present study with a Latinx sample is two-fold, as follows:

First, to determine the extent to which taking the new "**Our COVID-19 Knowledge Test"** has the potential to serve as a brief online e-health intervention for increasing knowledge about COVID-19 and increasing self-efficacy for preventing COVID-19 transmission; this will be investigated via **paired t-tests** comparing self-ratings of *COVID-19 knowledge* and *self-efficacy for performing COVID-19 risk reduction behavior* for before versus after taking the new True-False "**Our COVID-19 Knowledge Test;"** and,

Second, to **identify significant predictors** (i.e., via backward stepwise regression analyses controlling for social desirability) of the **two study outcome variables** of:

(1) a **higher COVID-19 knowledge test score on** "**Our COVID-19 Knowledge Test"**; and,

(2) a **higher self-efficacy for performing COVID-19 risk reduction behaviors—specifically for the after-taking "Our COVID-19 Knowledge Test" self-efficacy self-rating.**

The regression models will utilize independent variables selected from among the following:

- **Demographics** [i.e., gender, age, skin color, U.S. Born (yes/no), partner (yes/no), number of children, highest level of education, annual household income]
- **Employment** [i.e., work from home (yes/no), work in-person (yes/no), interact with people in public (yes/no), able to be less than 6 feet from others (yes/no), an essential worker (yes/no), attended work when suspected others or one's self had COVID-19 (yes/no)]
- **Home life** during the COVID-19 Pandemic [i.e., size of their household (scored 1-9); extent to which risk-reduction measures were introduced into the home, in terms of visitors being allowed to enter, or people who do not live there being permitted to enter the home for celebrations, parties, and social events (scored 1=low risk to 5=high risk)]
- **Personal Health**—Current and Before Pandemic [i.e. having had or suspecting they had COVID-19 in the past year (yes/no); how rate their health status and mental/emotional health status for before the pandemic versus currently (scored 1=very poor to 6=excellent; and comparing current versus before pandemic via paired t-test); and Body Mass Index (BMI)]
- **Social Desirability** [i.e. scored 0=lowest to 10=highest risk of providing socially desirable responses]
- **Perceived Social Support** [i.e. number of people providing social support at the present time (scored 0 to 6 or more people via categories); number of people who used to provide

them with social support but died during the COVID-19 pandemic (scored continuous); and, number of people who experienced a change in their circumstances—so they can no longer provide support (scored continuous)]

- **Quality of Life** [scored 1=very poor to 6=excellent]
- **Past-Year COVID-19 Related Stress—And Cultural Stress** [i.e., rating of stress when considering any pandemic era shopping stress, work stress, money stress, food stress, housing stress, school stress, technology stress, stress from societal changes (scored 0=no stress to 10=maximum/extreme stress); and a second rating of cultural stress related to increasing hate and violence toward Latinx immigrants (scored 0=no stress to 10=maximum/extreme stress)]
- **Retrospective Depression, Anxiety and Trauma in Past Year**—and Counseling Received [i.e., scored yes/no for each of 4 items—also creating a mental distress scores based on yes (1)/no (0) for depression, anxiety, trauma]
- **Our COVID-19 Knowledge Test** [i.e., scored true=1 /false=0 with 0=lowest to 44 = highest level of knowledge]
- **Diffusion of the Innovation** [i.e., scored no=0 and yes=1 with yes=will diffuse or recommend "Our COVID-19 Knowledge Test" to others]
- **Intention to Vaccinate for COVID-19** [i.e., scored no=0 and yes=1 with yes meaning will or already did vaccinate for COVID-19]

Research Questions, Survey Parts, and Data Analysis Plan

Given a sample of Latinx adults (N=118) who live in the United States and respond to the invitation to complete a survey (i.e., "*CLICK ON: https://tinyurl.com/LATINX-ADULTS-NEEDED (age 18 and above) TO TAKE 15 MINUTE SURVEY "About You and COVID-19" for*

a chance to win 1 of 3 $100 Amazon gift cards. No immigration questions."), the study will

answer the following research questions:

1-What were the Latinx adults' demographic characteristics [i.e. gender, age, skin color, U.S. Born (yes/no), partner (yes/no), number of children, highest level of education, annual household income]?

Part I: Basic Demographics (BD-9)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

2-Did they work continuously in the year 2019 before the COVID-19 pandemic, are they working now, and what is their work-related exposure to risks [i.e. (yes/no) work from home, work in-person, interact with people in public, must be less than 6 feet from others, an essential worker, attended work when suspected others or one's self had COVID-19]?

Part II: Employment and Risks During the COVID-19 Pandemic (ECRDCP-9)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

3-Regarding their home life during the COVID-19 pandemic, to what extent have multiple generations been living together, and what has been the size of their household? And, to what extent have there been risk-reduction measures introduced into the home, in terms of visitors being allowed to enter, or people who do not live there being permitted to enter the home for celebrations, parties, and social events?

Part III: Home Life During the COVID-19 Pandemic and Extent of Risk Reduction (HLDCP-ERR-3)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

4-Did they report having had or suspecting they had COVID-19 in the past year? What was their Body Mass Index (BMI)? And, how did they rate their health status and mental/emotional health status for before the pandemic versus currently during the pandemic—and was there a significant difference from before to during the pandemic in these ratings?

Part IV: Personal Health Background—Current and Before Pandemic (PHBCABP-8)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages; and, paired t-tests for before versus current ratings

5-What was their risk for providing socially desirable responses?

Part V: Single Item Rating of Risk of Providing Socially Desirable Responses (SIR-RPSDR-1)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages
NOTE: The regression analysis controls for this variable

6-What level of social support did they report having at the present time (i.e. from 0 to 6 or more people)? And, how many people who used to provide them with social support died during the COVID-19 pandemic, or experienced a change in their circumstances— so they can no longer provide support?

Part VI: Perceived Social Support Scale (PSSS-3)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

7-How did they rate their overall quality of life (1-very poor to 6-excellent)?

Part VII: Rating Your Quality of Life Scale (RYQOL-S-1)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

8-How did they rate their past-year COVID-19 related stress, given the possibilities of stress related to shopping, work, money, food, housing, school, technology, and societal changes (0=no stress to 10=extreme stress)? And, how did they rate their past year cultural stress related to society's increasing hate and violence toward immigrant arrivals, and by extension, members of the Latinx population?

Part VIII: Past-Year COVID-19 Related Stress—And Cultural Stress (PYCRS-ACS-2)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

9-What was reported for any past year depression, anxiety, or trauma—as well as for engagement in counseling (yes/no)?

Part IX: Retrospective Depression, Anxiety, and Trauma Scale (R-DATS-4) *Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages*

10-Upon taking the new "Our COVID-19 Knowledge Test," what was the level of knowledge for this Latinx sample (true, false)?

Part X: Our COVID-19 Knowledge Test (OCKT-44)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages
NOTE: The OCKT-44 knowledge score is the first (of two) study outcome/dependent variables.

11-Upon completion of the "Our COVID-19 Knowledge Test" were they willing to recommend the test to others (as a way to increase knowledge about COVID-19)— effectively diffusing this innovation of new e-health?

Part XI: Diffusion of the Innovation of Our COVID-19 Knowledge Test (DOI-OCKT-1)
Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

12-When comparing their level of COVID-19 knowledge for before taking the "Our COVID-19 Knowledge Test" versus after taking it, was there a significant difference in how they rated their COVID-19 knowledge? Similarly, was there a significant difference in how they rated their self-efficacy for preventing the transmission of COVID-19 for before taking the "Our COVID-19 Knowledge Test" versus after taking it?

Part XII: COVID-19 Knowledge and Self-Efficacy for Risk Reduction Behaviors (C-K-SE-FRRB-4)

Data Analysis Plan: Paired t-tests

13-What is their intention with regard to taking a COVID-19 vaccine once it is made available to them, or have they already received it (yes/no)?

Part XIII: Intention to Vaccinate for COVID-19 (IVC-1)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

14-Were there any significant relationships between selected independent variables with each of the two study outcome variables for: (1) COVID-19 knowledge test score (i.e. on Our COVID-19 Knowledge Test); and, (2) self-efficacy for preventing COVID-19 transmission—specifically for the after-taking "Our COVID-19 Knowledge Test" self-efficacy self-rating?

Data Analysis Plan: Independent t-tests, Pearson Correlations

15-While controlling for social desirability, what were the significant predictors of the two study outcome variables of: (1) a higher COVID-19 knowledge test score (i.e. on Our COVID-19 Knowledge Test); and, (2) a higher self-efficacy for preventing COVID-19 transmission—specifically for the after-taking "Our COVID-19 Knowledge Test" self-efficacy self-rating?

Data Analysis Plan: Backward Stepwise Regression Analysis

Treatment of the Data

In order to follow the above data analysis plans, the data collected via an online survey hosted on the Qualtrics platform will first be transferred to SPSS. Thereafter, statistical analysis will proceed, using the latest version of SPSS (26.0).

Anticipated Findings

Two sets of findings are anticipated, as discussed briefly in this section.

Anticipated for Evaluating the New "Our COVID-19 Knowledge Test"

First, to determine the extent to which taking the new "**Our COVID-19 Knowledge Test" (OCKT-44, True-False test)** had the potential to serve as a brief online e-health

intervention for increasing knowledge about COVID-19 and increasing self-efficacy for preventing COVID-19 transmission, **the following paired t-test results were anticipated**:

- There should be a significant difference between the self-ratings of knowledge about COVID-19 when comparing the **before** *versus* **after** taking the new "Our COVID-19 Knowledge Test" self-ratings of knowledge—upon analysis using a paired t-test.
- There should be a significant difference between the self-ratings of self-efficacy for performing behaviors for preventing COVID-19 transmission when comparing the **before** *versus* **after taking** the new "Our COVID-19 Knowledge Test" self-ratings of self-efficacy—upon analysis using a paired t-test.

Anticipated for the Regression Analyses Predicting the Study Outcome Variables

Second, to **identify significant predictors** (i.e., via backward stepwise regression analyses controlling for social desirability) of the **two study outcome variables**, it is anticipated that the following predictors will be significantly related to the study outcomes variables, as shown:

For the **study outcome variable #1 of a higher COVID-19 knowledge test score on "Our COVID-19 Knowledge Test,"** while controlling for social desirability, **the significant predictors are anticipated to be, as follows, given the independent variables shown:**

- Higher age (continuous)
- Female gender (male/female)
- Lighter skin color tone (continuous)
- Yes, for born in the U.S. (yes/no)
- Yes, for has partner (yes/no)
- No, for has children (yes/no)
- Higher level of education (continuous)
- Higher annual household income (continuous)
- Yes, for currently employed (yes/no)
- Yes, for work-related COVID-19 risk (yes/no)
- Yes, for lost employment during COVID-19 (yes/no)
- Yes, for had stable work pre-COVID-19 (yes/no)

- Larger household size (continuous)
- Higher extent of COVID-19 transmission risk in home (continuous)
- Higher Body Mass Index (BMI) (continuous)
- Yes, for had COVID-19 (yes/no)
- Better physical health status during COVID-19 (continuous)
- Better mental health status during COVID-19 (continuous)
- Higher level of social support (continuous)
- Higher level of quality of life (continuous)
- Lower level of COVID-19 related stress (continuous)
- Lower level of cultural stress (continuous)
- Lower mental distress past year (depression, anxiety, trauma) (continuous)
- Yes, for sought mental health counseling in the past year (yes/no)
- No, for lost social support due to death/change in status (yes/no)

For the **study outcome variable #2 of** a **higher self-efficacy for preventing COVID-19 transmission—specifically for the after-taking "Our COVID-19 Knowledge Test" self-efficacy score self-rating,** while controlling for social desirability, **the significant predictors are anticipated to be:**

- Higher age (continuous)
- Female gender (male/female)
- Lighter skin color tone (continuous)
- Yes, for born in the U.S. (yes/no)
- Yes, for has partner (yes/no)
- Yes, for has children (yes/no)
- Higher level of education (continuous)
- Higher annual household income (continuous)
- Yes, for currently employed (yes/no)
- Yes, for work-related COVID-19 risk (yes/no)
- Yes, for lost employment during COVID-19 (yes/no)
- Yes, for had stable work pre-COVID-19 (yes/no)
- Lower household size (continuous)
- Lower extent of COVID-19 transmission risk in home (continuous)
- Lower Body Mass Index (BMI) (continuous)
- Yes, if had COVID-19 (yes/no)
- Better physical health status during COVID-19 (continuous)
- Better mental health status during COVID-19 (continuous)
- Greater level of social support (continuous)
- Higher level of quality of life (continuous)
- Lower level of COVID-19 related stress (continuous)
- Lower level of cultural stress (continuous)

- Greater mental distress past year (depression, anxiety, trauma) (continuous)
- Yes, for sought mental health counseling in the past year (yes/no)
- No, for lost social support due to death/change in status (yes/no)

Delimitations

Study delimitations included participation being delimited to Latinx adults age 18 and above who were currently living in the United Sates—and had been continuously in the U.S. since March 2020, except for travel abroad for not more than 4 weeks in the past year. In addition, study participants had to indicate being able to read and understand English on the 12th grade level. Also, because some people living in the United States have been exposed to, and may have adopted the belief that COVID-19 is a "hoax" or not real, another study delimitation included having to indicate "no" for holding such beliefs, as they might not have been able to answer questions about COVID-19 as something that did not exist for them.

Limitations

As an online study, limitations included the risk of excluding the experiences of those members of the Latinx population who lack access to computers, laptops, tablets, and smart phones with reliable, consistent, or any Internet connection. Other limitations include the use of volunteers, resulting in a sample of convenience. Also, those who may have an undocumented immigration status, or family members with that status, may have been unwilling to take the survey. To address this, the recruitment message included a final brief statement: i.e., "No immigration questions." Also, as one of the populations most negatively impacted by the COVID-19 pandemic, there may have been considerable life stress, contributing to lack of study participation. Thus, the survey was made as short as possible to reduce response burden for this vulnerable population (i.e., survey took about 15 minutes). To further reduce the burden and potential stress on study participants during a pandemic, there were no open-ended questions

which would have required a written response. This served to further shorten the time needed to complete the survey.

Conclusion

This chapter introduced the study focus. This included providing an overview of the topic, the statement of the problem, the purpose of the study, study delimitations, and limitations.

Chapter II will provide a review of literature relevant to the study. Chapter III will provide the methods and procedures followed in conducting the study. Next, Chapter IV will present the results of the data analysis. Finally, Chapter V will provide a summary of the study, discussion of findings, while also providing implications, recommendations, limitations, and a final conclusion.

Chapter 2: Review of the Literature

This chapter presents a review of literature relevant to the present study's focus. The topics to be covered include the following: 1-the COVID-19 pandemic outbreak and early concerns; 2-widespread pandemic stress, anxiety, depression, and trauma; 3-health disparities, inequities, racism and Latinx populations; 4-comorbid conditions, housing, employment, and other barriers.

I. The COVID-19 Pandemic Outbreak and Early Concerns

Paules et al. (2020) noted that "on December 31, 2019, Chinese authorities reported a cluster of pneumonia cases in Wuhan, China, most of which included patients who reported exposure to a large seafood market selling many species of live animals" (p. 2). It became critical for a worldwide partnership for research to continue in order to discover the exact etiology of this virus. This followed from "the emergence of yet another outbreak of human disease caused by a pathogen from a viral family formerly thought to be relatively benign" (p. 2). This served to underscore the perpetual challenge of "emerging infectious diseases and the importance of sustained preparedness" (Paules et al., 2020, p. 2).

Sun and Zhai (2020) affirmed how "the outbreak of novel coronavirus disease 2019 (COVID-19) rapidly spread over 215 countries, areas or territories, impacting every aspect of human life." (p. 1). In addition, "as of May 1, 2020, more than 3,272,200 cases of COVID-19 had been confirmed, including over 230,100 reported deaths" (Sun & Zhai, 2020, p. 1).

Cantos and Rebolledo (2020) studied the Latinx population and COVID-19 morbidity and mortality. They used data showing the Latinx population lived "in 43 out of the 44

jurisdictions in the United States," given access to data on ethnicity (p. 1). It was found that "Latinx groups have 2–4 times higher rates of COVID-19 than expected" (p. 1). In addition, they found that the Latinx COVID-19 mortality rate was 1.5 higher than the rate for their Caucasian neighbors (Cantos & Rebolledo, 2020).

Early concerns in the pandemic were discussed by Berg and Lin (2020). They noted how, even though scientists and doctors tried to mitigate the spread of COVID-19 early in March 2020, public health infection prevention strategies were ignored. This followed false messaging about even the existence of the virus, which was broadcast to large audiences, essentially unchecked. The 45th President of the United States and his administration, for reasons unknown, impacted public safety when former President Trump negated social distancing and other mitigation measures. Unfortunately, the use of false information as a tool and weapon for political folly transpired, despite scientific and medical sources repeatedly pleading with urgency for members of the public to wear masks and stay 6 feet apart within social distancing practices in order to mitigate morbidity and mortality (Berg & Lin, 2020).

Another factor that emerged early in the pandemic involved trust. Berg and Lin (2020) found that "trust in medical and scientific communities can lead individuals to follow prevention guidelines more closely" (p. 847). Research found that wearing face masks ranked lowest on the participants' list of behaviors they were likely to engage in as prevention behavior; this seemed to follow from mask-wearing having become a highly politicized action. But, at the time of data collection, there was no official CDC policy regarding the wearing of facemasks. Covering your mouth when coughing or sneezing, avoiding crowded areas, washing hands, and staying home if sick ranked among the top adhered to prevention methods to avoid COVID-19, although these prevention methods had also become politicized (Berg & Lin, 2020).

The importance of social distancing and ventilation issues were also emphasized early in the pandemic. Sun and Zhai (2020) acknowledged public confusion regarding the "efficacy of proper social distancing and ventilation to prevent COVID-19" transmission. (p. 1). Further, it was recommended that "close contact should be avoided on account of virus transmission via droplet and airborne routes by respiratory activities" (Sun & Zhai, 2020, p. 1).

Sun and Zhai (2020) discovered that confined spaces that lack fresh air access (i.e., stores, buses, cars, offices) led to the increased "probability of infection due to COVID-19 in representative confined environments with 100 % and 50 %" occupancy ratios (p. 6). Also, COVID-19 transmission risk was greater with longer time of exposure. Asserted was how the highest risk of infection came from riding on a bus, a method of transportation Latinx essential worker minorities traditionally utilize. They explained how buses have "lower fresh air rate, and higher occupancy density" (p. 6). Both of the aforementioned are leading indicators of COVID-19 infection. It was determined then that "social distancing and ventilation play an important role in preventing the risk of COVID-19 outbreak" (Sun & Zhai, 2020, p. 7).

Sun and Zhai (2020) also discussed how the projected "infection probability in typical indoor environments" served to illustrate how "social distancing had a great positive impact on decreasing" the infection risk (p. 9). The research pointed toward the importance of attending to "the influences of occupancy density, ventilation, and exposure time on infection probability" (p. 9). It was clear that research proved how having adequate ventilation and maintaining social distancing would assist in mitigating this virus. These emerged as critical factors in reducing morbidity and mortality for this disease (Sun & Zhai, 2020).

Also, early in the pandemic, it was recognized how heath literacy was viewed a critical mitigation factor, given the need to rapidly disseminate reliable health information to the public

during a pandemic (Singu et al., 2020). Characteristics of one's lower English language proficiency and literacy levels were associated with worse health outcomes, with such factors have been traditionally associated with Latinx and other immigrant communities. Language barriers were viewed as having posed a danger to understanding pandemic mitigation messages during the COVID-19 pandemic (Singu et al., 2020, p. 7).

Early in the pandemic, Singu et al. (2020) emphasized how pandemics were "more of a social problem than a healthcare problem" (p. 3). In this manner, social determinants of health were recognized for their powerful influence in mitigating disease. Social determinants of health were defined as encompassing multiple dimensions: a human being's right to "health and health care;" the larger social and community context in which health and health care were being pursued; the level of the "neighborhood and built environment;" education; and the key factor of "economic stability" with poverty a predictor of high morbidity and mortality regarding COVID-19 (Singu et al., 2020, p. 3).

II. Widespread Pandemic Stress, Anxiety, Depression, and Trauma

Luo et al. (2020) reiterated that "in addition to the physical health" impacts, there were negative "potential psychological and mental health" impacts from the COVID-19 pandemic—which "should also be taken seriously" (p. 1). Research investigated the psychological and mental distress impact of the COVID-19 pandemic on people. Reviewed were 63 studies from 17 countries, with a total of 162,639 participants. It was found that worldwide, people were suffering "heavy psychological burdens among healthcare workers and the general public such as anxiety, depression, panic attacks, or psychotic symptoms"—as well as psychological distress (p. 1). The investigation also found that the "most common indicators of psychological impact reported across studies were anxiety and depression" (p. 6). Across studies reviewed, the

prevalence rates for anxiety ranged from 28% to 38%, and the prevalence rates for depression ranged from 23% to 32% (p. 6). It was also found that "protective factors included having sufficient medical resources, having up-to-date and accurate health information, and taking precautionary measures" (p. 7). Researchers concluded that the highest "risk factors" for a "heavier psychological burden" included the following: being female; a nurse; having a higher risk for contracting COVID-19; having a lower socioeconomic status; experiencing social isolation; and spending longer periods of time watching COVID-19 related news broadcasts (Luo et al., 2020, p. 7).

Fortuna et al. (2020) noted that "sociopolitical, racial, and environmental stresses that communities of color" had already experienced were "unimaginably magnified during the COVID-19 pandemic" (p. 1). For example, cited was one hospital in the mission district of San Francisco, as a heavily Latinx neighborhood, which reported the following: "Latinos constituted 25%–20% of COVID-19-related hospitalizations and 80% of intensive care admissions in one month alone" (p. 1). Existing living conditions alone were viewed as contributing to trauma, anxiety and depression, while the addition of a pandemic had not decreased the situation. Profoundly, regarding Latinx youth "given the relationship between trauma exposure and toxic stress and risk for pervasive mental health consequences into adulthood, a focused response to COVID-19" was perceived as very much needed during the pandemic (p. 2). Chronic stress and disenfranchisement for youth results when they witness family disrespect and "is a risk factor for post-traumatic stress disorder (PTSD) and long-term mental and physical health consequence" (Fortuna et al., 2020, p. 2).

Long-term clinical complications were of great concern for Latinx youth, according to Liu et al. (2020), while symptoms of post-traumatic stress disorder, depression, and anxiety were

of most concern. Not being in school during COVID-19 had led to high levels of loneliness, even though the Latinx youth had support from immediate family. Meanwhile, cultural values contributed to the fact that Latinx youth were less likely report these symptoms. Disruptions in daily routine, loss of family members due to COVID-19, and being unable to see friends put this already vulnerable population at greater risk for mental health issues (Liu et al., 2020).

When Kujawa et al. (2020) developed the online Pandemic Stress Questionnaire as a direct result of the COVID-19 pandemic, as they saw a need to measure pandemic stress and the potential internalization of the symptoms that stress has on an individual; specifically, their focus was on the pandemic's "effects, including interpersonal, occupational, and financial strain, with the potential to dramatically increase rates of depression and anxiety" (p. 1281). They discovered through their survey that adults were at high risk for anxiety and depression in regards to COVID-19 (Kujawa et al., 2020).

Before the pandemic, it was already well known that "stressful events are a well-established factor" for the risk of developing "depression and anxiety" (Kujawa et al., 2020, p. 1281). This stress was present as soon as the World Health Organization declared a pandemic on March 11, 2020, and the country shut down. Isolation and the sudden fear of an impending illness left many traumatized. A multitude of experiences followed for societal members, being associated with the pandemic, while including "social isolation, interpersonal strain, and uncontrollable stressors" (p. 1281). Additionally, 20 million people lost their employment. The stress of sudden and unexpected unemployment and a subsequent "economic recession" was linked with "increased rates of depression, anxiety, and suicide" (Kujawa et al., 2020, p. 1281).

III. Health Disparities, Inequities, Racism, and Latinx Populations

The COVID-19 pandemic has been intimately connected with discussion, scholarship and research on related health disparities, inequities, and racism, including a focus on Latinx populations. Historical disenfranchisement among this community must be addressed.

Health disparities as they relate to high rates of COVID-19 morbidity and mortality in the Latinx population have become glaringly evident (Harkness et al., 2020). A Latinx organization that conducts, supports, and facilitates research intending to help victims of trauma and violence, among other issues, called CLaRO (The Center for Latino Health Research Opportunities), initiated a pilot program as a direct result of the COVID19 pandemic, being pioneered by Harkness et al. (2020). The purpose of this new program was to devise new ways of facilitating more consistent methods in health disparities research during public health events. There was a perceived need to counter the obvious challenges of doing so, while seeking new ways of solving health disparities during pandemics and public health crisis in the future. Specifically, the "SAVA syndemic [substance abuse, violence/trauma, and HIV/AIDS]" was acknowledged as having been exacerbated by COVID-19 for Latinx sexual minority men (p. 544). This expanded syndemic was then targeted by research in Florida that required "consideration of the roles of economic deprivation, stigma, and fear of deportation, among other culturally specific barriers to participation, as well as emerging challenges related to COVID-19" (Harkness et al., 2020, p. 544).

Contributing to research on health disparities during the pandemic, one outcome of this pilot study, according to Harkness et al. (2020), was the qualitative research tool called the Pandemic Stress Index. This tool was "developed to assess the behavioral and psychosocial impacts of COVID-19 on Latinx sexual minority men" (p. 546). The tool was used in many

studies, having been translated into six languages. Citing an awareness of the need for innovation in addressing health disparities, the researchers emphasized the need to develop new ways of conducting data analyses in future proposed research with Latinx sexual minority men. Moreover, findings showed how the pandemic led to a deepening of health disparities, while creating new challenges necessitating new methods of communicating with and assisting the Latinx population. Innovation was identified as key to being able to tackle specific cultural needs and support these Latinx communities (Harkness et al., 2020).

Assessing the challenges of conducting health disparities research during the pandemic, Harkness et al. (2020) identified the difficulty in signing up Latinx research participants during a pandemic, keeping their attention, and the challenges of how impersonal online engagement negatively impacted research studies. The problems encountered included: the challenge of collecting data remotely when many households had unreliable Internet access; the prevalence of ownership of older flip-phones versus smart phone with Internet access; and, the fact that older Latinx family households do not go online. These factors led to a realization that research is leaving out important elderly populations. Data collection was hampered due to churches and community centers in Latinx neighborhoods having been closed because of pandemic social distancing restrictions. This eliminated participant recruitment at community events held by churches and community centers, which had "historically supported our recruitment efforts" (p. 546). Further, the impersonal connections that result because of disengagement led to mistrust, a traditionally historical challenge among this specific population that values interpersonal social connections. In addition, "it is crucial to consider Latinx communities' cultural contexts to develop culturally congruent recruitment and retention plans" (p. 546). This was viewed as vitally important in going forward in future research, in order to foster innovative

and supportive ways of conducting more social engaged and connected Latinx research, especially during times of public health crisis (Harkness et al., 2020).

Other health disparities research during the pandemic has focused on older adults. This follows from how older Latinx and Black adults have been disproportionately negatively affected by COVID-19. In this regard, Garcia et al. (2021) assessed the "how and why" of COVID-19's impact on the historically disenfranchised Latinx community—as reflected in "adults aged 65 and older" being "more than 7 times as likely as younger adults to die of COVID-19" (p. 1). Also, "among older adults, Blacks and Latinxs have death rates approximately 3 and 2 times higher than Whites, respectively" (p. 2). Older adults are disproportionately impacted by COVID-19 at higher rates, due to "the direct effects of the pandemic, aging processes," and "age-related changes to the immune system" that lead to "increased morbidity and mortality rates" from an infectious disease (Garcia et al., 2021, p. 3).

Garcia et al. (2021) discerned that, regarding the COVID-19 pandemic, "the racial/ethnic health inequalities it has exposed are longstanding and deeply rooted in American society" (p. 4). Severe complications directly contributing to worse morbidity and mortality outcomes were unearthed for older Latinx and Blacks in tandem with underlying comorbidities. For economically disadvantaged communities of color, Latinx and Blacks experienced higher rates of chronic diseases, poor nutritional food choices in the areas in which they traditionally and historically live, poor green spaces, sub-par housing conditions, and lack of access to health care. These aforementioned factors revealed why older minority populations experienced poor outcomes. It was noted that even medial practices and staff discriminated against Latinx and Blacks, in that they had higher than average waiting times, less access to medical resources like PPE, and lack of transportation/access to care. Also unveiled was the fact that "60% of nursing

homes where at least a quarter of residents are Black or Latinx had at least one COVID-19 case, while only 30% of homes with almost entirely White (<5% Black or Latinx) residents had a case" (Garcia et al., 2021, p. 3).

What were some of the proposed solutions to these inequalities in health for Latinx and Black populations in America revealed during the COVID-19 pandemic, as per Garcia et al. (2021)? Solutions proposed included: the provision of triage centers; economic relief; essential workers being provided with personal protective equipment (PPE); the provision of hazard pay; paid leave from work; improved health care access; and, COVID-19 data being reported by race, ethnicity and socioeconomic status. The aforementioned solutions were recommended for implementation to begin to mitigate morbidity and mortality for Latinx communities suffering the inordinate burden of COVID-19 (Garcia et al., 2021).

Others focused on health disparities and inequities involving Latinx immigrants that have been identified during the pandemic. Strully et al. (2021) provided evidence that Latinx populations, specifically immigrants, were over represented in the United States in COVID-19 morbidity and mortality statistics. Analyses conducted found the intersection between "counties' COVID-19 cases" and data on "nativity and racial ethnic" composition of those counties, with an "emphasis on how these associations vary across regions and within the pan-ethnic category of Latinx" (p. 57). In terms of American communities, it was found that "an average county has 9% Latinx; however, the means and concentrations of Latinx are highest in the West and South (18.3% and 10.6% means respectively)" (p. 58). And incidentally, the combined estimate for the "percentage of foreign-born was significantly larger than for any of the racial-ethnic composition measures" (p. 59). So which community is carrying the highest burden of COVID-19 sickness and death in the United States? Variables examined in these locations included age, gender,

socioeconomic conditions, economic inequity, racial-ethnic segregation, commuting patterns, chronic disease and lack of access to health care. Findings showed that out of all 3,106 counties in the Unites States, Latinx populations bore the highest COVID-19 rates of infection over and beyond any other race or ethnic group (Strully et al., 2021).

Recent literature has highlighted other inequities associated with the Latinx population during the pandemic. Page and Flores-Miller (2021) discussed how the Latinx community in Baltimore faced many challenges during the COVID-19 pandemic. Glaring anti-immigration policies and heath inequities have become sadly clear. Latinx minorities make up only 5% of the population in Baltimore, and are the fastest growing community in the area. Many are undocumented immigrants. Hence, they did not qualify under the Affordable Care Act, nor were they eligible for direct stimulus payments. Prior to the pandemic outbreak, Latinx patients had rarely accessed health care at the John Hopkins Health System. With the onset of the pandemic, suddenly there were high rates of non-English speaking Latinx patients presenting in emergency care, with over 42% testing positive for COVID-19. Albeit the majority resisted going to the emergency room or seeking any medical help because they had no insurance, those who became patients expressed concerns over not wanting to lose their jobs; or, patients were afraid they would be deported or sent to detention camps. This fear reflected the anti-immigration rhetoric from the Trump administration that had led to a deepening of mistrust within the Latinx community. The Coronavirus Aid, Relief, and Economic Security Act did cover medical care and vaccinations for undocumented people, but many had no knowledge of this fact (Page & Flores-Miller, 2021).

Additionally, Page and Flores-Miller (2021) discussed how lessons should be learned from the pandemic regarding emergent issues that must be addressed, covering the following:

racial disparities and immigration reform; the importance of ensuring access to health care; the reality of health disparities in our health care and work systems; how essential workers must be given protections in order to avoid morbidity and mortality; and, how employers need to provide paid leave from work. The most vulnerable in our society, who are also considered essential workers in a pandemic — those workers who kept food on the nation's tables — should not have to risk exposure to a deadly virus in order to keep their employment. It was duly noted that current antiquated, historic discrimination, and social determinants of health inequity among our society's most vulnerable must be rectified and reform is in order (Page & Flores-Miller, 2021).

Gravlee (2020) argued that systemic racism has existed for decades and that COVID-19 just shed light on this, highlighting the inequities and burdens placed on minority communities. Hence, it was difficult to disagree that "this inequity—as appalling as it is—may still underestimate the problem, as data remain woefully incomplete" (p. 1). The federal government was not as properly prepared as it should have been for a public health emergency. This permitted the emergence of "deep-seated social, economic, and power inequities" for vulnerable communities (p. 2). Longstanding inequities unfairly and systemically continue to "shape the distribution of risks and resources for health, resulting in the social and spatial clustering of epidemic diseases" (p. 2). Gravlee (2020) pointed to potentially even more stress, given the possibility that "people who recover from the new coronavirus may experience long-lasting damage that increases the risks associated with hypertension and heart disease" (p. 2). The long-term effects of the COVID-19 pandemic were deemed completely unclear at this point, pending further studies. With little or no access to health care, sick leave, nor oftentimes valid or reliable health information, the COVID-19 pandemic exposed how vulnerable Latinx and minority communities suffered disproportionately from inequities (Gravlee, 2020).

Rubio et al. (2021) sought to remedy emergent inequities during the pandemic. This followed from how "the Latinx population and other communities of color" have experienced "long-standing structural barriers to care access and systemic inequities and racism that can increase the time from symptom onset to effective isolation" (p. 1). They identified a COVID-19 mitigation strategy called the isolation cascade framework, involving "the identification and isolation of infectious persons" (p. 1). The approach was viewed as assisting in targeting areas of weakness in initiating mitigation responses to prevent transmission. COVID-19 testing delays and identifying barriers to the prevention of the spread of transmission in vulnerable Latinx people with an income of less than $50k per year in San Francisco CA were analyzed. California had reported the highest numbers on the Latinx population's COVID-19 morbidity and mortality in the United States. Testing delays were noted that could lead to a "decrease" in the "efficacy of containment strategies in these populations" (p. 1). Reducing the spread of this disease depends on proper isolation strategies. The goal was to "focus on shortening the symptom to effective isolation cascade," as this is "crucial to ensuring equity" and the "effectiveness of public health interventions to reduce SARS-CoV-2 transmission" (Rubio et al., 2021, p. 7).

For Gardner (2021) who had first-hand experience taking care of COVID-19 patients, this pandemic hit hard and close to home. As a Cuban immigrant, Gardner reported directly witnessing the problems that this population faces. Problems identified included: not being able to understand English; lack of access to health resources; fear of authority; and, a lack of access to reliable and valid information. Discussed was the fact that immigrants made up the fabric of this nation upon which it was built, and Latin communities deserved respect. Gardner declared that "this virus has laid bare what has been known for generations: poverty and inequality in the

form of overcrowded housing, lack of access to healthy food, and systemic racism lead to poor health outcomes" (Gardner, 2021, p. 312).

IV. Comorbid Conditions, Housing, Employment, and Other Barriers

Emphasis has also been placed on the prevalence of comorbid conditions and COVID-19, as well as the role of housing density in transmission. Also, the role of employment without the ability to social distance has been studied, including a focus on other barriers.

The issue of density arose in the research of Gil et al. (2021), as well as other factors related to COVID-19. First, Gil et al. noted the high prevalence of comorbid conditions among Hispanics as including hypertension, obesity, and diabetes. They reported that Latinx minorities presented to the emergency room in Rhode Island hospitals at disproportionately higher rates, requiring admission and hospitalization. Gil et al. found that, compared "with non-Hispanic Whites (NHW), Hispanics were younger (53 years, median age) and had higher rates of Medicaid and less commercial/HMO/PPO coverage" (p. 1). Hispanics age 65 and above "were 2.66 times more likely to be admitted" to an intensive care unit, while "3.67 times more likely to get intubated" (p. 1). Further, Gil et al. presented findings suggesting the disproportionate burden of COVID-19 morbidity and mortality "might be related to the high rates of community transmission among densely populated Hispanic neighborhoods" in Rhode Island (Gil et al., 2021, p. 4).

Others emphasized how race and comorbidities were identified as significant predictors in Latinx populations for COVID-19 morbidity and mortality (Vaughan et al., 2021). Findings also indicated that the unequal burden of disease suffered by the Latinx were the direct result of insurance type or lack thereof; and "certain comorbidities (including diabetes, heart disease, chronic kidney disease, and obesity)" were now "known to strongly predict COVID-19

hospitalization" (p. 2). Vaughan et al. made the observation that COVID-19 statistics had heavily relied on participants in hospitals who were very ill, and that further studies needed to be conducted specifically on people with milder disease (Vaughan et al., 2021).

Community-level, neighborhood-level, and related housing and poverty factors have also been a focus of research. South Bronx residents during the pandemic were dealing with "poor housing, difficulty" with being able to "socially distance," and "crowded neighborhoods" which served to increase "their risk for infection" (Miller et al., 2021, p. 2). Heavily impacted was Lincoln Hospital, a city hospital in the South Bronx. The study by Miller et al. acknowledged that racial disparities and social determinants of health were a higher burden for their surrounding community, and played a large part in COVID-19 morbidity and mortality; and, were likely even more of a factor than were comorbidities in the heavily Latinx community the hospital served. Through hospital electronic medical records, the South Bronx and other Bronx communities were compared. It was recognized that the South Bronx, a more socially and economically disadvantaged neighborhood, was affected more by COVID-19 than the rest of the Bronx communities, and although this disadvantaged area of the South Bronx had a "significantly higher comorbidity burden" they did have access to "public insurance to access medical care in comparison to the remainder of the Bronx" (p. 1). This highlighted "the need to address the social/economic factors contributing to health access disparity to reduce the adverse impact of COVID-19 in these communities" (Miller et al., 2021, p. 2).

As per Miller et al. (2021), the three highest COVID-19 morbidity and mortality affected areas in New York City were the ones that were the poorest and had the highest Latinx populations—with the Bronx coming in at number one with 34% Latinx. The South Bronx was where "approximately 29% of the population live in poverty with high unemployment rates, 14%

of adults are uninsured and 10% have foregone medical care in the past 12 months" (p. 2). Research findings confirmed "the significant association of residence in a poor socioeconomic community with mortality" (Miller et al., 2021, p. 2).

Benfer et al. (2021) supported actions to ensure that equality in housing policy encompassed a whole society fairly, specifically as a COVID-19 prevention and mitigation strategy. The focus was on eviction prevention policy. They argued that renters were suffering the highest burden regarding housing during COVID-19. Renters in populated areas suffered from overcrowding, eviction and transient living, which exacerbated morbidity and mortality. Latinx and Blacks were also affected by COVID-19 at higher rates, because they tend to live in poverty at higher rates than their Caucasian counterparts. It was argued that overcrowding in housing "conditions and transient living" were "known to be a high risk" factor "for COVID-19" that served to "increase new contact with others" and made "compliance with pandemic health guidelines difficult or impossible" (p. 2). In addition, there was evidence of disproportionate high rates of "both COVID-19 and eviction in communities of color" which served to "compound negative health effects" (p. 1). This made the domain of housing and "eviction prevention a critical intervention to address racial health inequity" (Benfer et al., 2021, p. 1).

While also identifying the role of housing, Benfer et al. (2021) emphasized how eviction can have major negative impacts on individuals and their families. Statistics supported the fact that "behavioral and physiological responses to eviction likely heighten the spread of infectious diseases" (p. 3). In addition, "the mere threat of eviction can increase stress levels, anxiety, and depression—all of which can weaken the immune system" (p. 3). Evidence demonstrated how the "most vulnerable to eviction are also more likely to suffer from poor health conditions that place them at high risk of severe or fatal cases of COVID-19" (p. 4). It was concluded that, with

regard to the issues of inequity in housing, eviction, and transient living, Latinx minorities were "among the highest risk populations" for suffering from these issues (p. 7). Also, housing, eviction and transient living served to trigger "a cycle of poor health and housing instability" (p. 7). Latinx minorities also faced related issues of loss of income and suffering from low-income or poverty (Benfer, et al., 2021).

In terms of the role of living in poor neighborhoods and in dense housing conditions, there were pertinent findings. Quan et al. (2021) discovered inequities in socioeconomic variables were a "predictor of poor outcomes in COVID-19" that were exacerbated by living in a poor neighborhood and dense housing conditions (p. 1). These findings arose via an investigation of the impact of race and socioeconomic status by Quan et al., while studying four hospitals within a southeast Michigan health system during the start of the pandemic. Participants included COVID-19 positive people and data was extracted through electronic medical records. As a consequence of dense housing conditions, what emerged were difficulties in adequately adhering to social distancing and mitigation techniques. Health inequities seen in this study demonstrated that health inequities were "not due to intrinsic characteristics of racial groups, but rather" were "produced by systemic inequities rooted in structural racism" (p. 6). The results were lower salaries, lack of educational opportunities, and lack of healthy foods in the neighborhoods in which they lived and worked. Quan et al. highlighted the necessity of finding solutions on local, state, federal and tribal levels in order to end inequities among centuries long historically disenfranchised populations. COVID-19 morbidity and mortality were not dependent upon race or ethnicity; instead, COVID-19 morbidity and mortality were thriving off of long-standing systemic social inequities and racism (Quan et al., 2021).

According to Cantos and Rebolledo (2020), “housing segregation rooted in structural racism has been perpetual in most large urban metropolitan gateway areas, where Latinx communities settled in largely segregated ‘barrios’ since the postwar era” (p. 1). Among Latinx households in Massachusetts, those living in crowded or dense housing situations accounted for “the most severe clinical outcomes” (p. 1). Poor clinical outcomes were exacerbated by not only a lack of adequate housing options, but also by low wage employment. Cantos and Rebolledo discussed how the roots of the Latinx housing problem existed, “in addition to the constant fear of detainment in immigration facilities, family separation, and deportation” (p. 1). These common concerns among Latinx immigrants played a role in the hardships faced by members of this group when “securing housing” (Cantos & Rebolledo, 2020, p. 1).

Other research has identified factors driving high rates of COVID-19 infection among Latinx populations—including barriers to social distancing and employment-level factors. Cervantes et al. (2021) contacted 60 COVID-19 Latinx survivors and conducted telephone interviews directly with them during March and July of 2020. The purpose was to understand their COVID-19 experience. All of the participants lived in low-income areas, almost half were considered essential workers, and almost half lived in a home that had more than four people living in it. Determined after analyses was that what drove higher rates of COVID-19 morbidity and mortality in this Latinx population were the following: misinformation, immigration fears, poverty, and challenges in social distancing and mitigation efforts while being essential workers (Cervantes et al., 2021).

Other barriers impacting the Latinx population have been identified in research. Cantos and Rebolledo (2020) noted how in Atlanta, Georgia the Latinx population contended with “potential COVID-19 exposures” while “commuting to and from work” on mass public

transportation (p. 1). Barriers contended with included how an undocumented immigrant status prevented obtaining a driver's license (p. 1). Another issue involved 52% of Latinx families having members who were COVID-19 asymptomatic. This fueled the spread of infection at work, school, and wherever people congregated. Another barrier contributing to community spread was how Latinx community members were not invited to participate "during the planning and implementation of our community-based COVID-19 testing events in the Atlanta area" (p. 2). Barriers to testing were found to be persisting, and "much needs to be done" to ensure the inclusion of Latinx communities in prevention and education events (p. 2). Also, state and federal policies needed to reflect better efforts to foster "social justice for ethnic minorities" and to "dismantle structural racism in the United States"—as the ultimate barriers to health (Cantos & Rebolledo, 2020, p. 2).

Conclusion

This chapter provided a review of literature relevant to the present study. The review of literature covered several broad topics, as follows: 1-the COVID-19 pandemic outbreak and early concerns; 2-widespread pandemic stress, anxiety, depression, and trauma; 3-health disparities, inequities, racism and Latinx populations; 4-comorbid conditions, housing, employment, and other barriers.

The next Chapter III will present the methods followed in this study.

Chapter 3: Methods

This chapter will provide the methods and procedures followed in the study. The chapter will detail the research design of the study, the approval process to conduct the study, study inclusion criteria, the use of a social media campaign to recruit the sample of Latinx participants, and the research instruments used. Data treatment and analysis plans will also be discussed.

Overview of the Study Design and Procedures

This research study employed a cross-sectional online survey using the Qualtrics platform, as approved by Teachers College, Columbia University as the online tool for survey research. The research was conducted solely online as a result of the COVID-19 pandemic, and no in-person research was conducted.

IRB Review Board Approval

Approval was sought from the Institutional Review Board (IRB) of Teachers College, Columbia University prior to start of this study. Approval was received on March 28, 2021, under exempt category as protocol #21-246 (see **Appendix A**, IRB Approval Letter). Online data collection began on April 7, 2021 and ended May 8, 2021.

Recruitment of Study Participants

A social media campaign was used to recruit Latinx adults. Email recruitment was utilized (see Study Email in **Appendix B**), as well as the posting of messages on Facebook, LinkedIn, Instagram, and WhatsApp. Text messages and Twitter were also used (see Study Text in **Appendix C**). In all cases, the social media campaign used the core recruitment messages with the link to the online survey on Qualtrics, as follows:

"CLICK ON: https://tinyurl.com/LATINX-ADULTS-NEEDED (age 18 and above) TO TAKE 15 MINUTE SURVEY "About You and COVID-19" for a chance to win 1 of 3 $100 Amazon gift cards. No immigration questions."

Further, regarding the use of Facebook, efforts were made to recruit survey participants on all pages with the terminology "Latinx, Hispanic, Latina, Latino." LinkedIn messages requesting participants to complete and share the survey link were sent out every few days, while using various hashtags: i.e., #research, #risk factors, #diabetes, #SARSCoV2, #Cancer, #HIV, #CoronaVirusUpdates, #Latinx, #EssentialWorkers, #Prevencion, ##Prevention, #Latinos, #Latinas, #SafetyAlways, #Covid19Pandemic, #Covid19Impact, #Covid19Awareness, #COVID19research, and #COVID-19.

Latinx social media venues were also via Facebook, Instagram and Twitter. Specific requests were made to share the survey link, while reaching out to groups such as the following: 100 Hispanic Women, The Hispanic Federation, Hispanic diabetes and nutrition sites, The Latino Diabetes Association, The Latina Health Coach, Shop Latinx Wellness, NBC News Latino, Latinx Diabetes Groups, Latinx HIV groups, Latinx Health & Wellness groups, and Latina Univision news persons. The Teacher's College, Columbia University Bulletin Board was also utilized to recruit participants.

There was also outreach to Latinx friends, family, colleagues and associates via the various above-mentioned online venues, and they were asked to share the link to the survey. In all cases, it is assumed that snowballing occurred as yet others were invited to access the link to the online survey.

Additional Study Procedures

Participants who accepted the invitation to click on the link for study participation (i.e., *https://tinyurl.com/LATINX-ADULTS-NEEDED*) were presented with the Informed Consent and Participant's Rights documents (see Informed Consent, **Appendix D**). Those who provided their informed consent, by clicking on a box (I agree) were able to proceed to the next step.

Study Inclusion/Exclusion Criteria

The next step involved a screening tool (see **Appendix E**) to ensure that those recruited for study participation met the study inclusion criteria. To determine this, prospective participants had to answer 6 questions, as follows:

> 1- Are you an adult age 18 or above? Yes___ No___
> 2- Do you self-identify as Latinx, Hispanic or Latino? Yes___ No___
> 3- Have you been living continuously within the United States since March 2020—without any travel outside the country for more than 4 weeks? Yes___ No___
> 4- Are you able to read and understand English on the 12th grade level? Yes___ No___
> 5- Some people believe that COVID-19 is a "hoax" or is not real, so they would NOT be able to answer questions about COVID-19, as something that does not exist for them. Do you feel able to answer questions about "About You and the COVID-19 Pandemic"? Yes___ No___
> 6- Are you able to devote about 15 minutes to this study at this time – for a chance to win one of three $100 Amazon gift cards? Yes___ No___

If they answered "yes" to all of the 6 questions above, they accessed the survey. If they answered "no" to any of the 6 questions above, they received this message:

> Thank you for your time, but unfortunately, you are not qualified to participate in this study.

Generating Prizes: The Study Incentive for Participation

As mentioned above, to encourage participation in the study, there was a study incentive. Specifically, participants had the opportunity to win one of three Amazon Gift Cards valued at $100, with a 1 in 250 chance of winning. Once the survey was completed, any individual could elect to enter the gift card lottery by following a link where they could enter their email address.

The webmaster of the Research Group on Disparities in Health (RGDH), Dr. Rupananda Misra, both created and managed the prize application program, while utilizing encryption for all emails entered into the program. Upon being informed of the study being closed, Dr. Misra then ran the program to generate the three winning emails—with an Amazon gift card number being sent to those three email accounts. The principal investigator was not able view any email address entered, ensuring the privacy of all those who elected to enter their emails and participate in the lottery drawing for the prize of one of three $100 Amazon gift cards.

The Study Sample

In response to the social media campaign, the study successfully recruited a total of 230 potential participants. However, 25 records were from a duplicate IP address, raising the possibility of an individual having attempted to take the survey more than once to increase chances of winning the study prize; hence, these 25 records were eliminated. Of those remaining 205 records, 136 were eligible based on the six eligibility questions. One of those did not continue with the survey. Of the remaining 135, only 118 had proceeded sufficiently into the survey so as to have data for the two primary outcome variables of focus in the study. Hence, there was a final sample of convenience comprised of N=118, as the study completers.

Of note, there were 17 study non-completers (i.e., 135 – 118 = 17) who had not provided data for the primary outcome variables. A comparison was made for the demographics for study completers (N=118) versus non-completers (N=17) using independent t-tests, despite the very small N for some comparisons due to missing data. The only significant difference found ($p = .0006$), showed that the study completers had lighter skin color than did the study non-completers, necessitating caution, given the small N=8 for non-completers in this comparison.

See Table 1.

Table 1. *Comparing Survey Completers (N=118) to Non-Completers (N=8) Via Independent T-Tests*

					t-test (significant at p<0.013)		
	Has Primary Outcome Variable? Yes= Completer No= Non-Completer	N	M	SD	*T*	df	P
Age	Yes	118	41.42	15.620	1.566	133	.120
	No	17	47.76	15.706			
Household Income	Yes	118	4.03	1.593	-.686	124	.494
	No	8	3.63	1.685			
Skin Color	Yes	118	3.29	1.255	3.493	10.280	.006**
	No	8	4.25	.707			
Education level	Yes	118	5.05	1.232	-1.488	124	.139
	No	8	4.38	1.408			

*p<.05, **p<.01, ***p<.001 Bonferroni Adjustment Significance (.05/4 p= 0.013)
Note: All p values above 0.013 are considered non-significant, and only those below 0.013 are considered statistically significant.

Description of Research Instrumentation

The study survey instrument is the Survey for Latinx Adults "About You and the COVID-19 Pandemic" (see **Appendix F**). The survey parts are standard tools utilized by the Research Group on Disparities in Health (RGDH), Director, Professor Barbara Wallace, PhD, Teachers College, Columbia University. Survey parts were adapted for the present study by the Principal Investigator and the dissertation sponsor, Dr. Barbara Wallace, while original contributions were also made by the Principal Investigator. The survey parts are presented in this section.

Part I: Basic Demographics (BD-9)

This research study utilized the 9-item scale innovated by Dr. Barbara Wallace that has been adapted for use in numerous studies by the RDGH's fellows. The present survey's scale

included questions pertaining to the demographic characteristics of gender, age, race, skin color, U.S. Born (yes/no), partner (yes/no), number of children, highest level of education, and annual household income.

Part II: Employment and Risks During the COVID-19 Pandemic (ECRDCP-9)

This 9-item scale was developed for use in pandemic era research conducted by fellows of the RGDH in late 2020 with first time use in another COVID-19 study (i.e., Williams-Gunpot, 2021). This tool provides: 1) a *variable for prior stable work before the pandemic*, while using dichotomous scoring (yes = 1, no= 0); 2) a *variable for current employment*, while using dichotomous scoring (yes = 1, no= 0); and, 3) for those who indicated "yes" for being employed, then there was an additional section providing a *variable for more risky work* (i.e., meaning greater risk for COVID-19 transmission at work) via 7 items dichotomously scored (yes=1, no=0)—resulting in a total continuous score on a Likert scale scored from 0 to 7. The items for the *variable for more risky work*, were as follows:

> 3-I have work that can be done online, allowing work from home sometimes or all the time **_Yes _No (reverse score)**
>
> 4-I have work that requires me to go and work in-person—sometimes or all the time **_Yes _No**
>
> 5-I have work that requires me to interact with people in public, including people who are strangers **_Yes _No**
>
> 6-I have work that requires me to be *less than 6 feet from other people* at least some of the time **_Yes _No**
>
> 7-I was told I am considered an essential worker **_Yes _No**
>
> 8-I went to work even when I suspected and/or knew that *my co-workers or people there around me had COVID-19* **_Yes _No**
>
> 9-I went to work even when I suspected and/or knew that *I had COVID-19* **_Yes _No**

The *variable for more risky work* produces a mean, standard deviation, minimum and maximum score.

Part III: Home Life During the COVID-19 Pandemic and Extent of Risk Reduction (HLDCP-ERR-3)

This 3-item scale was also developed for use in pandemic era research conducted by fellows of the RGDH in late 2020 with first time use in a prior COVID-19 study (i.e., Williams-Gunpot, 2021). This tool provides a *variable for household size* on a Likert scale that ranges from 1 person in the household up to 9 persons in the household—providing a mean, standard, deviation, minimum and maximum for household size.

Secondly, the tool provides a *variable for risk reduction measures in home*, using a Likert Scale that ranges from 5=always (i.e. scores of 5 or 4 indicate home risk reduction measures are not being taken) to 1=never, given the items below:

> 2-We have visitors who come inside our home in the exact same way as before the COVID-19 pandemic. ***5_always 4_almost always 3_sometimes 2_rarely 1_never***
>
> 3-We have celebrations, parties, and social events with family and friends (who do not live with us) inside of our home in the same way as before the COVID-19 pandemic. ***5_always 4_almost always 3_sometimes 2_rarely 1_never***

The *variable for risk reduction measures in home* will provide a mean, standard, deviation, minimum and maximum score.

Part IV: Personal Health Background—Current and Before Pandemic (PHB-CABP-8)

This is a standard tool used by RGHD, which was modified for pandemic era research studies (e.g., Williams-Gunpot, 2021), while shortened for the present study to further reduce response burden. This was done by eliminating questions about having any comorbid conditions or having experienced any increase or decrease in weight during the pandemic.

Remaining questions ascertained the following: whether participants had or suspected they had COVID-19 in the past year (scored yes=1, or no=0); how participants rated (on a 6-point Likert ranging from 1=very poor, to 6=excellent) their *physical health status and mental health status* for before the pandemic versus currently/during the pandemic—permitting the use

of paired t-tests to compare ratings; and, questions on weight and height that permitted ascertaining their Body Mass Index (BMI).

This survey part gave rise to a mean, standard deviation, minimum and maximum score for *physical health status and mental health status* for currently or during the COVID-19 pandemic.

Part V: Single Item Rating of Risk of Providing Socially Desirable Responses (SIR-RPSDR-1)

The Single Item Rating of Risk of Providing Socially Desirable Responses (SIR-RPSDR-1) was created by Dr. Barbara Wallace in the year 2018 for use by RGDH fellows in research studies, having been launched in studies in Laryea (2019), used in Torez (2019); and, serving now as the standard tool for ascertaining social desirability in RGDH studies (e.g., Hall, 2021; Williams-Gunpot, 2021). The short one-item tool is ideal for pandemic era research, while replacing prior long-standing use of another well-known 13-item tool for ascertaining social desirability (i.e., Crowne & Marlowe, 1960).

The one item measure uses a 0-10 Likert rating scale, as follows:

> I sometimes say things that I think will please people, or what I think they want to hear—versus the honest truth, which might be difficult or painful for other people to hear and accept, or might lead them to judge me harshly.
>
> I rate myself on a scale of 0 to 10, as follows:
>
> 0 1 2 3 4 5 6 7 8 9 10
>
> 0-I am not like this at all 10-I am like this all the time

The *variable for risk of providing socially desirable responses* will provide a mean, standard, deviation, minimum and maximum score.

Part VI: Perceived Social Support Scale (PSSS-3)

This is a standard tool created for use by RGHD fellows in studies, while introduced in the research of Lian (2017), and since shortened for pandemic era research from 5 items to 1 item (e.g. Hall, 2021; Williams-Gunpot, 2021). A single item combines the essence of 5

questions into one description of what having social support "means," followed by a request for participants to indicate the number of people they have in their life who provide this, using a 5-option Likert scale, as follows for a *social support variable*:

> **Having SOCIAL SUPPORT means having people in your life who provide the following kinds of support and assistance: you can ask them for advice, or receive words of encouragement; get money or get food in an emergency; or have a place to temporarily wait for help, or stay or live in an emergency.**
>
> **1-Please indicate the extent to which you experience SOCIAL SUPPORT in your life at this time (i.e., right now):**
>
> 1. I have no one like this in my life right now
> 2. I have at least 1 one person like this in my life right now
> 3. I have at least 2 people like this in my life right now
> 4. I have 3-5 people like this in my life right now
> 5. I have 6 or more people like this in my life right now

This item provides a mean, standard deviation, minimum and maximum for the *social support variable*.

Following qualitative findings in a prior pandemic era study conducted by Hall (2021), it became apparent that the tool was missing the reality of the loss of social support given COVID-19 deaths. Others may have experienced a loss in social support from those who suffered a change in their status, given the massive economic consequences from the pandemic. Hence, this study introduced two additional questions for a new *loss of social support variable*, as follows:

> 2-How many people who **used to provide you with social support** died during the COVID-19 pandemic?
>
> 3-How many people experienced a change in their circumstances—so they can no longer provide social support to you?

As it turned out, in data analysis, the low number of people lost or who had a change in circumstances was low, resulting in the decision being made to create a single dichotomous variable that combined items #2 and #3 into one item for the variable of *any loss of social support due to death or a change in circumstances* (scored yes=1, or no=0).

Part VII: Rating Your Quality of Life Scale (RYQOL-S-1)

The is a tool created for use by the RGDH by Dr. Wallace in 2018, having been first used in Mecklembourg (2019). The single item scale uses domains covered in the quality of life scale created by Gordon and Siminoff (2010): i.e. specifically, physical function, social support, body image, emotional function, coping, cognitive function (excluding their future orientation, and breast cancer impact). The single item tool provides a composite description of quality of health, and asks participants to provide a rating using a 6-point Likert scale (1=very poor to 6=excellent), as follows:

> **Please rate yourself, after reading the following:**
>
> Please think about the **quality of your life,** including the following: my **ability to function physically** (my level of strength, tendency to experience fatigue, ability to walk up and down stairs, ability to perform physical activities around the house, ability to move my arms and legs, degree to which I feel pain in my body); my **amount of social support** (number of people I can rely on for help, including in a crisis); my **feelings about my body image** (attractiveness, finding clothing I like to wear); my **emotional functioning** (degree of depression, anxiety, worry, uncertainty); and my **mental functioning** (ability to concentrate, remember things, think clearly). Keeping all of this in mind, **please rate your quality of life at the present time**:
>
> **I rate my quality of life as:**
> **__1-Very poor __2-Poor __3-Fair __4-Good __5-Very Good __6-Excellent**

This short one-item tool provides a mean, standard deviation, minimum and maximum score for the *quality of life variable*

Part VIII: Past-Year COVID-19 Related Stress—And Cultural Stress (PY-CRS-ACS-2)

This is a new tool created in the year 2020 for pandemic era research for use by the RGDH, while it introduces a *cultural stress scale* created by the Principal Investigator and her dissertation sponsor, Dr. Barbara Wallace—and for use by RGDH. The first scale on *past-year COVID-19 related stress* was introduced for pandemic era research (i.e. Williams-Gunpot, 2021), while reduced from an 8-item scale to a one item scale for the present study: i.e., thereby further reducing response burden. The one item combines 8 areas of potential stress into one

question; further, the present study expanded the focus by adding a 9th area involving stress from sickness and death. All 9 combined areas create a description of potential past-year stress experienced during the pandemic. The item is scored on a 10-point Likert scale ranging from 1=I had no stress to 10=I had maximum/extreme stress, as follows:

> 1-Please think about all the changes you have experienced due to the COVID-19 pandemic. These changes may have caused you **stress (tension, pressure, worry, anxiety**).
> You may have experienced stress from your own experiences, or those of your family members in the following areas:
>
> **stress from sickness and death; shopping stress; work stress; money stress; food stress; housing stress; school stress (e.g. children in your family); technology stress; stress from societal changes**
>
> **Please rate all the stress in your life in the past year that was related to <u>COVID-19</u>:**
>
> *0 1 2 3 4 5 6 7 8 9 10*
> ***0= I had NO stress*** ***10= I had MAXIMUM, EXTREME stress***

In addition, this study created a new one item on past year *cultural stress scale*, scored on a 10-point Likert scale ranging from 1=I had no stress to 10=I had maximum, extreme stress—while asking about experiences encompassing the factors mentioned, below, as follows:

> 2-In the past year, there was also an increase in deportations and hate crimes (violence) toward Latinos. This may have created **cultural stress** for members of the Latinx population (e.g. worries surrounding documentation issues and fears of deportation; or concerns about increased discrimination, hate, etc.).
>
> **Please rate all the stress in your life in the past year that was related to <u>cultural stress</u>:**
> *0 1 2 3 4 5 6 7 8 9 10*
> ***0= I had NO stress*** ***10= I had MAXIMUM, EXTREME stress***

Both the *past-year COVID-19 related stress* and *cultural stress* scales will produce a mean, standard deviation, minimum, and maximum scores.

Part IX: Retrospective Depression, Anxiety, and Trauma Scale (R-DATS-4)

This is shorter version of a scale created for use in Lian (2017), and since used in numerous studies (e.g. Williams-Gunpot, 2021)—as a common tool used by the RGDH. In contrast to Lian (2017), this study *does not* ask about any depression or anxiety experienced in

the past 3, 6, and 12 months. In contrast, pandemic era research studies only ask about past-year experiences of depression and anxiety, while adding trauma.

Of note, to permit retrospective recall, descriptions of depression, anxiety and trauma are provided, permitting scoring of yes=1 and no=0, as follows:

> **Depression** is an overwhelming feeling of intense sadness. It can include feeling helpless, hopeless, and worthless. It can sometimes be expressed through angry outbursts, as well as bursting into tears. There can also be loss of appetite, or an increase in appetite. There can also be difficulty sleeping or oversleeping. In addition, there can be a loss of interest in your activities. Such a depression can last for days or weeks. This goes beyond typical feelings of sadness, such as following some disappointment.
> -1-Do you think you experienced any **depression** in the past year or 12 months? **_No _Yes**
>
> **Anxiety** is an overwhelming and intense feeling of nervousness, fear, tension, powerlessness, and apprehension. It can reach a peak so there are moments of panic where one's heart may be pounding/beating quickly, or there is rapid breathing/difficulty breathing. A person may also experience sweating and trembling. Sometimes it can be so intense that one has trouble concentrating/thinking, leaving the house, or trouble being around other people. The fear can be very intense, and one can feel like there is some impending danger. This goes beyond typical feelings of nervousness, such as when anticipating a new situation, or something unexpected, or unknown.
> -2-Do you think you experienced any **anxiety** in the past year or 12 months? **_No _Yes**
>
> **Trauma** is the most shocking and horrible thing to ever happen to a person (unless prior trauma)—such as: serious accident or fire; seeing someone seriously injured or die; war; earthquake/flood; physical/sexual abuse; or, a loved one's homicide, suicide, or other tragedy. Trauma symptoms *may* include: anxiety; nightmares; feeling numb, unable to love, and detached with no interest in spending time with others; guilt about surviving if others did not; flashbacks from trauma as images that unexpectedly "pop up" in the mind; avoiding reminders of trauma; and problems concentrating.
> -3-Do you think you experienced any **trauma** in the past year or 12 months? **_No _Yes**

Scoring responses for past year depression (yes=1, no=0), anxiety (yes=1, no=0), and trauma (yes=1, no=0), these scores generate a composite *mental distress variable* for use in analyses, while creating a mean, standard deviation, minimum (0) and maximum (3) scores for a *mental distress variable*.

Finally, there is a *receipt of counseling in the past year variable* based on a dichotomous response (yes=1, no=0) when asked if they sought it out in the past year from a mental health professional, or other helper, or family member.

Part X: Our COVID-19 Knowledge Test (OCKT-44)

The "Our COVID-19 Knowledge Test" (OCKT-44) is new tool created in late 2020 as a brief online e-health intervention for use in pandemic era research, as well as for wide dissemination online post-research. The OCKT-44 was introduced in prior pandemic-era research (i.e. Williams-Gunpot, 2021) with a sample of African Americans, while used in the present study with a Latinx sample. The OCKT-44 has 44 "true or false" questions, while all answers are true. Making the OCKT-44 a brief online intervention, after completing the 44 items, participants are told that all items were "true." This follows a methodology utilized in prior RGDH studies with similar brief online e-health interventions: i.e., Afram (2019) and Aiyedun (2014). Meanwhile, the OCKT-44 also provides an indicator of participants' level of knowledge with regard to COVID-19, including strategies to prevent transmission. Knowledge scores can range from 0 = lowest level of knowledge to 44 = highest level of knowledge, given scoring of true=1 and false=0, while sample items follow:

1) Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is responsible for the disease known as COVID-19. **_True _False**
2) COVID-19 is a very serious, highly contagious disease that is easily spread (transmitted), may cause severe illness and death, and is much more deadly than the flu. **_True _False**
3) When a person infected with COVID-19 coughs, sneezes—or breathes, talks, sings, or shouts—COVID-19 is spread (transmitted) as droplets in the air **_True _False**

Of note, the OCKT-44 is rooted in public health and evidence-based recommendations propagated during the COVID-19 pandemic in the United States, while being a function of that historical period of time. As a period pre-widespread vaccination, the items may lack ongoing relevance in any post-pandemic period for a majority vaccinated population. However, in a country such as India or Brazil, the OCKT-44 still has relevance, at the time of this writing, while those countries are still negotiating the height of their pandemic; dissemination of OCKTT-44 also continues to have critical relevance in Southern, Southwest, and Midwestern

states as their vaccination rates are low, and variant strains of COVID-19 continue to cause morbidity and mortality.

The OCKT-44 provides a mean, standard deviation, minimum and maximum scores for **the study outcome variable # 1 of COVID-19 knowledge test score on** "**Our COVID-19 Knowledge Test" (OCKT-44).**

Part XI: Diffusion of the Innovation of Our COVID-19 Knowledge Test (DOI-OCKT-1)

After disclosure that all items were "true" in a "true-false" knowledge test, this is a common tool delivered in prior studies of the RGDH—such as Afram (2019) and Williams-Gunpot (2021), while simply asking via one item, as follows:

> Thank you for answering the True-False questions in ***Our COVID-19 Knowledge Test.*** **ALL answers were TRUE** as a way to inform you about COVID-19.
>
> After this study, we will widely circulate on the internet a link to ***Our COVID-19 Knowledge Test***, as a new way to inform people about COVID-19.
>
> 1-Would you recommend that other adults take ***Our COVID-19 Knowledge Test*** to assist them in better coping with the COVID-19 pandemic?
> **___No=0 ___Yes=1 ___Unsure**

Answers of "yes" indicate diffusion of the innovation of learning about COVID-19 by taking the "**Our COVID-19 Knowledge Test" (OCKT-44)**, as per the diffusion of innovation theory of Rogers (1995).

Scoring involves yes=1, while no or unsure = 0, providing percentage and frequency data.

Part XII: COVID-19 Knowledge and Self-Efficacy for Risk Reduction Behaviors (C-K-SE-FRRB-4)

This is also a common tool delivered in prior studies of the RGDH—such as Afram (2019) and Williams-Gunpot (2021), while adapted for each study to permit ascertaining **self-ratings of *knowledge* and *self-efficacy*** for the periods before or **Pre-OCKT-44-Test-Taking**

v*ersus* after or **Post-OCKT-44-Test-Taking.** The participants make the **Pre-OCKT-44-Test-Taking** and **Post-OCKT-44-Test-Taking** self-ratings for knowledge and self-efficacy in quick succession.

First, there is a *COVID-19 Knowledge scale*, rated on a 6-point Likert scale from 1-very poor to 6 excellent, as follows, permitting paired t-tests to compare their **Pre-OCKT-44-Test-Taking** versus **Post-OCKT-44-Test-Taking** self-ratings:

> **Scale 1: COVID-19 Knowledge (Pre- and Post-Test-Taking** the ***Our COVID-19 Knowledge Test*****)**
>
> **1-BEFORE** I answered the above true-false questions, I would **rate what I knew about COVID-19,** as follows:
> **_1-Very poor _2-Poor _3-Fair _4-Good _5-Very good _6-Excellent**
>
> **2-AFTER** I answered the above true-false questions, I would **rate what I know NOW about COVID-19,** as follows:
> **_1-Very poor _2-Poor _3-Fair _4-Good _5-Very good _6-Excellent**

A mean, standard deviation, minimum and maximum score are calculated for the *COVID-19 knowledge scale.*

Second, there is a *COVID-19 Prevention Self-Efficacy scale*, rated on a 6-point Likert scale from 1=0% confident to 6=100% confident, as follows, permitting paired t-tests to compare their **Post-OCKT-44-Test-Taking** versus **Post-OCKT-44-Test-Taking** self-ratings:

> **Scale 2: COVID-19 Prevention Self-Efficacy (Pre- and Post-Test-Taking *Our COVID-19 Knowledge Test*)**
>
> **3-BEFORE** I answered the above true-false questions, I would **rate my level of confidence for *preventing the spread of COVID-19*,** as follows:
> **_1-0% confident _2-20% _3-40% _4-60% _5-80% _6-100% confident**

A mean, standard deviation, minimum and maximum score will be calculated for **the study outcome variable # 1 of:**

> **4-AFTER** I answered the above true-false questions, I would **rate my level of confidence NOW for *preventing the spread of COVID-19*,** as follows:
>
> **_1-0% confident _2-20% _3-40% _4-60% _5-80% _6-100% confident**

This scale provides a mean, standard deviation, minimum and maximum score for **the study outcome variable # 2 for self-efficacy for performing COVID-19 risk reduction behaviors—specifically for the after-taking "Our COVID-19 Knowledge Test" self-efficacy self-rating**.

Part XIII: Intention to Vaccinate for COVID-19 (IVC-1)

This is a new tool created for use by the RGDH for pandemic era research, being introduced by Williams-Gunpot (2021), ascertaining via dichotomous scoring (yes=1, no=0) vaccination status or intention to vaccinate. Of note, the study was conducted online from April 7, 2021 to May 8, 2021, during a period wherein access had not yet been opened for all categories of persons within the United States. The single item asked:

> 1-Will YOU get a COVID-19 vaccination when it becomes available to YOU (e.g. spring or summer of 2021)—or have you already been vaccinated?
> __Yes, I will get the vaccine = 1. __Yes, I already received the vaccine = 1
> __Probably, after I witness others getting it first, and it seems safe = 1
> __No = 0 __Not Sure = 0

The Data Treatment Plan

Given a sample of Latinx adults (N=118) who lived in the United States and respond to the invitation to complete a survey (i.e., "*CLICK ON: https://tinyurl.com/LATINX-ADULTS-NEEDED (age 18 and above) TO TAKE 15 MINUTE SURVEY 'About You and COVID-19' for a chance to win 1 of 3 $100 Amazon gift cards. No immigration questions."*), the study will answer the following research questions—*using the data analysis plans indicated*:

1-What were the Latinx adults' demographic characteristics [i.e. gender, age, skin color, U.S. born (yes/no), partner (yes/no), number of children, highest level of education, annual household income]?

> **Part I: Basic Demographics (BD-9)**
> *Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages*

2-Did they work continuously in the year 2019 before the COVID-19 pandemic, are they working now, and what is their work-related exposure to risks (i.e. [yes/no] work from home,

work in-person, interact with people in public, must be less than 6 feet from others, an essential worker, attended work when suspected others or one's self had COVID-19)?

Part II: Employment and Risks During the COVID-19 Pandemic (ECRDCP-9)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

3-Regarding their home life during the COVID-19 pandemic, to what extent have multiple generations been living together, and what has been the size of their household? And, to what extent have there been risk-reduction measures introduced into the home, in terms of visitors being allowed to enter, or people who do not live there being permitted to enter the home for celebrations, parties, and social events?

Part III: Home Life During the COVID-19 Pandemic and Extent of Risk Reduction (HLDCP-ERR-3)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

4-Did they report having had or suspecting they had COVID-19 in the past year? What was their Body Mass Index (BMI)? And, how did they rate their health status and mental/emotional health status for before the pandemic versus currently during the pandemic—and was there a significant difference from before to during the pandemic in these ratings?

Part IV: Personal Health Background—Current and Before Pandemic (PHB-CABP-8)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages; and, paired t-tests for before versus current ratings

5-What was their risk for providing socially desirable responses?

Part V: Single Item Rating of Risk of Providing Socially Desirable Responses (SIR-RPSDR-1)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

NOTE: The regression analysis controls for this variable

6-What level of social support did they report having at the present time (i.e. from 0 to 6 or more people)? And, how many people who used to provide them with social support died during the COVID-19 pandemic, or experienced a change in their circumstances— so they can no longer provide support?

Part VI: Perceived Social Support Scale (PSSS-3)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

7-How did they rate their overall quality of life (1-very poor to 6-excellent)?

Part VII: Rating Your Quality of Life Scale (RYQOL-S-1)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

8-How did they rate their past-year COVID-19 related stress, given the possibilities of stress related to shopping, work, money, food, housing, school, technology, and societal changes (0-no stress to 10-extreme stress)? And, how did they rate their past year cultural stress related to society's increasing hate and violence toward immigrant arrivals, and by extension, members of the Latinx population?

Part VIII: Past-Year COVID-19 Related Stress—And Cultural Stress (PYCRS-ACS-2)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

9-What was reported for any past year depression, anxiety, or trauma—as well as for engagement in counseling (yes/no)?

Part IX: Retrospective Depression, Anxiety, and Trauma Scale (R-DATS-4) *Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages*

10-Upon taking the new "Our COVID-19 Knowledge Test," what was the level of knowledge for this Latinx sample (true, false)?

Part X: Our COVID-19 Knowledge Test (OCKT-44)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

NOTE: The OCKT-44 knowledge score is the first (of two) study outcome/dependent variables.

11-Upon completion of the "Our COVID-19 Knowledge Test," were they willing to recommend the test to others (as a way to increase knowledge about COVID-19)— effectively diffusing this innovation of new e-health?

Part XI: Diffusion of the Innovation of Our COVID-19 Knowledge Test (DOI-OCKT-1)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

12-When comparing their level of COVID-19 knowledge for before taking the "Our COVID-19 Knowledge Test" versus after taking it, was there a significant difference in how they rated their COVID-19 knowledge? Similarly, was there a significant difference in how they rated their self-efficacy for preventing the transmission of COVID-19 for before taking the "Our COVID-19 Knowledge Test" versus after taking it?

Part XII: COVID-19 Knowledge and Self-Efficacy for Risk Reduction Behaviors (C-K-SE-FRRB-4)

Data Analysis Plan: Paired t-tests

13-What is their intention with regard to taking a COVID-19 vaccine once it is made available to them, or have they already received it (yes/no)?

Part XIII: Intention to Vaccinate for COVID-19 (IVC-1)

Data Analysis Plan: Descriptive statistics, including means, standard deviations, frequencies, and percentages

14-Were there any significant relationships between selected independent variables with each of the two study outcome variables for: (1) COVID-19 knowledge test score (i.e. on Our COVID-19 Knowledge Test); and, (2) self-efficacy for preventing COVID-19 transmission—specifically for the after-taking "Our COVID-19 Knowledge Test" self-efficacy self-rating?

Data Analysis Plan: Independent t-tests, Pearson Correlations

15-While controlling for social desirability, what were the significant predictors of the two study outcome variables of: (1) a higher COVID-19 knowledge test score (i.e. on Our COVID-19 Knowledge Test); and, (2) a higher self-efficacy for preventing COVID-19 transmission—specifically for the after-taking "Our COVID-19 Knowledge Test" self-efficacy self-rating?

Data Analysis Plan: Backward Stepwise Regression Analysis

Data Management

In order to follow the above data analysis plans, data collected via an online survey hosted by the Qualtrics platform will be transferred to SPSS. The statistical analysis will proceed using the latest version of SPSS (26.0).

Conclusion

This chapter provided the methods and procedures used in the study. This included an overview of the study design, process of receiving IRB approval, the recruitment of the Latinx study participants, a description of the research instrumentation, and the data analysis and data management plan.

Next, Chapter IV will provide the results of data analysis, as per the plans indicated in this chapter.

Chapter 4: Results

This chapter provides a detailed presentation of the study results. Findings are presented by research question, providing organization to the chapter. Additionally, findings are presented in table format.

Results for Research Question #1

> *What were their demographic characteristics [i.e., gender, age, skin color, U.S. Born (yes/no), partner (yes/no), number of children, level of education, household income, student (yes/no), retired (yes/no), etc.]?* ***(BD-9)***

Part I: Basic Demographics (BD-9)

The sample (N=118) was 100% Latinx (N=118), 80.5% female (N=95), with a mean age of 41.42 (min=19, max=78, SD=15.620). Some 68.6% were U.S. born (N =58), and 55.9% (N=66) had no children—with the mean number of children being closest to one child (M= .97, SD=1.362, min=0, max=5). The skin color mean was 3.29 (min=1, max=5, SD=1.255) for closest to light skin tone. The education level category mean was 5.05 (min=2, max=7, SD= 1.232) for a bachelor's degree, and the annual household income category mean was 4.03 (min=1,max=9, SD=1.593) for between $50,000 and $99,999.

See Table 2.

Table 2. *Basic Demographics (BD-9)* (N=118)

	N	%
Gender (N=118)		
Female	95	80.5
Male	23	19.5
Age (N=118)		
18-25	19	16
26-30	16	14
31-35	24	20
36-40	04	03
41-45	08	07
46-50	14	12
51-55	07	06
56-60	09	08
61-65	05	04
66-70	06	05
71-78	06	05
Mean age (41.42), SD (15.620)		
min (19), max (78)		
Race and Ethnicity		
Latinx	118	100
Skin Color		
5-Medium to Dark	17	14.4
4-Medium to Light	46	39.0
3-Light	26	22.0
2-Very Light	12	10.2
1-White	17	14.4
Mean skin color (3.29), SD (1.255)		
Min (1), max (5)		
Born in the US (N=118)		
Yes	81	68.6
No	37	31.4
Other Country of Origin (N=37)		
Brazil	1	2.7
Colombia	7	18.9
Dominican Republic	1	2.7
Ecuador	2	5.4
El Salvador	3	8.1
Guatemala	3	8.1
Italy	1	2.7
Mexico	3	8.1
Peru	5	13.5
San Marino	1	2.7
Venezuela	9	24.3
Other	1	2.7

Table 2 (continued)

	N	%
Marital Status (N=118)		
Single	41	34.7
Married	37	31.0
Separated	2	1.7
Divorced	13	11.0
Widowed	4	3.4
Domestic Partnership	7	5.8
Living with Significant Other	14	11.9
Education Level (N=118)		
2- High School or GED	2	1.7
3- Some College	17	14.4
4- Associates	11	9.3
5- Bachelors	43	36.4
6- Masters	33	28.0
7- JD/PhD/MD	12	10.2
Mean education (5.05), SD (1.232)		
min (2), max (7)		
Annual Household Income (N=118)		
1-$10,000 to $19,000	10	8.5
1-$20,000 to $39,000	14	11.9
3-$40,000 to $49,000	11	9.3
4-$50,000 to $99,000	32	27.1
5-$100,000 to $199,000	39	33.1
6-$200,000 to $299,000	6	5.1
7-$300,000 to $399,000	4	3.4
8-$400,000 to $499,000	1	0.8
9-$500,000 to $799,000	1	0.8
Mean Income (4.03), SD (1.593)		
min (1), max (9)		
Children (N=118)		
0	66	55.9
1	17	14.4
2	20	16.9
3	5	4.2
4	7	5.9
5	3	2.5
Mean Children (.97), SD (1.362)		
min (0), max (5)		

Results for Research Question #2

What was their employment status at present, the year before the COVID-19 pandemic (i.e., year 2019), and what was the level of current risk for COVID-19 transmission at their present place of employment? ***(ECRDCP-9)***

Part II: Employment and Risks During the COVID-19 Pandemic (ECRDCP-9)

Some 66.1% (N=78) were currently working during the pandemic, while 69.5% (N=82) had worked continuously before the COVID-19 pandemic. Regarding the level of risk for COVID-19 transmission for those who were currently working (N=78), and their level of work-related risks for COVID-19 transmission, 49.2% (N=58) were able to work online sometimes or all the time, while 35.6% (N=42) were required to work in person sometimes or all the time. Less than a third of the sample worked in some of the highest risk circumstances for COVID-19 transmission, as reflected in: 28% (N=33) having to interact with people in public/strangers; 31.4% (N=37) being required to be less than 6 feet from other people at least some of the time; and, 28.8% (N=34) being an essential worker. Of note, 11% (N=13) went to work when they suspected or knew other co-workers had COVID-19, while only 2.5% (N=3) went to work when suspected or knew that they themselves had COVID-19. For purposes of subsequent data analysis, the sample was dichotomized into those facing any work-related COVID-19 risk (yes=43.2%, N=51) versus those not facing any risk (no=56.8%, N=67)—as the majority.

See Table 3.

Table 3. *Employment and Risks During the COVID-19 Pandemic (ECRDCP-9)* (N=118)

	N	%
I worked continuously and without interruption before the COVID-19 pandemic, or in the year 2019 (N=118)		
Yes	82	69.5
No	36	30.5
I am currently (N=118)		
Employed	78	66.1
Unemployed	40	33.9
<u>Findings on Work-Related COVID-19 Risks (N=78)</u>		
I have work that can be done online, allowing work from home sometimes or all the time (N=78)		
Yes	58	49.2
No	20	16.9
I have work that requires me to go and work in person—sometimes or all the time		
Yes	42	35.6
No	36	30.5
I have work that requires me to interact with people in public, including people who are strangers (N=78)		
Yes	33	28.0
No	45	38.1
I have work that requires me to be less than 6 feet from other people at least some of the time (N=78)		
Yes	37	31.4
No	41	34.7
I was told I am considered an essential worker (N=78)		
Yes	34	28.8
No	44	37.3
I went to work even when I suspected and/or knew that my co-workers or people there around me had COVID-19 (N=78)		
Yes	13	11.0
No	65	55.1
I went to work even when I suspected and/or knew that I had COVID-19 (N=78)		
Yes	3	2.5
No	75	63.6

Results for Research Question #3

Regarding their home life during the COVID-19 pandemic, to what extent have multiple generations been living together, and what has been the size of their household? And, to what extent have there been risk-reduction measures introduced into the home, in terms of visitors being allowed to enter, or people who do not live there being permitted to enter the home for celebrations, parties, and social events? ***(HLDCP-ERR-3)***

Part III: Home Life During the COVID-19 Pandemic and Extent of Risk Reduction (HLDCP-ERR-3)

The household size mean was 2.83 (min=1, max=7, SD=1.193) for a moderate size with 50.8% (N=60) living with a partner, and 19.5% (N=23) living alone. There was evidence of multiple generations living together; for example, 13.6% (N=16) had grandparents/seniors over age 60 in the household, while 22% (N=26) lived with college age/young adults, and 20.3% (N=24) lived with school age children.

The risk of COVID-19 transmission in their home was a mean of 1.64 (min=1, max=5, SD=.7536) for a low moderate risk. For example, 63.6% (N=75) reported that they never have celebrations and social events in their home in the same way they did before the pandemic, and, 43.2% (N=51) never have visitors in their home exactly as before the pandemic—suggesting engagement in COVID-19 mitigation measures.

See Table 4.

Table 4. *Home Life During the COVID-19 Pandemic and Extent of Risk Reduction (HLDCP-ERR-3)* (N=118)

	N	%
Mean Household Size (2.83), SD (1.193), min (1), max (7) ***Mean COVID-19 Home Risk (1.64), SD (.7536), min (1), max (5)***		
Where you Lived and Slept in the Past Year (N=118)*		
1-Lived alone	23	19.5
2-Lived with partner/spouse	60	50.8
3-Lived with infant or baby	10	8.5
4-Toddler young child	10	8.5
5-School age children	24	20.3
6-Adolescents/Teenagers	25	21.2
7-College age/young Adults	26	22.0
8-Other Adults live here	45	38.1
9-Grandparents/seniors 60+	16	13.6
Visitors in Home Exactly as Before COVID- 19 (N=118)		
1-Never	51	43.2
2-Rarely	49	41.5
3-Sometimes	12	10.2
4-Almost Always	4	3.4
5-Always	2	1.7
Celebrations and Social Events Same as Before COVID (N=118)		
1-Never	75	63.6
2-Rarely	34	28.8
3-Sometimes	5	4.2
4-Almost Always	2	1.7
5-Always	2	1.7

Note: *represents where respondents were able to select multiple answer options

Results for Research Question #4

Did they report having had or suspecting they had COVID-19 in the past year? What was their Body Mass Index (BMI)? And, how did they rate their health status and mental/emotional health status for before the pandemic versus currently during the pandemic—and was there a significant difference from before to during the pandemic in these ratings? ***(PHB-CABP-8).***

Part IV: Personal Health Background—Current and Before Pandemic (PHB-CABP-8)

Some 18.6% (N=22) had COVID-19 in the past year, while 11% (N=13) were not sure if they had COVID-19. Of note, none thought COVID-19 was a "hoax" (N=118, 100%). For Body Mass Index (BMI) the mean was 27.68 for overweight (min=17.6, max=47.23, SD=6.09).

The self-rating for physical health status pre-pandemic was a mean of 4.55 (min=3, max=6, SD=.873) for between good and very good, while during the pandemic mean was 4.13 (min=1, max=6, SD=1.136) for closest to good. Additionally, the self-rating for mental health status pre-pandemic was a mean of 4.35 (min=2, max=6, SD=1.033) for closest to good, while the rating during the pandemic was a mean of 3.66 (min=1, max=6, SD =1.262) for between good and fair.

See Table 5.

Table 5. *Personal Health Background—Current and Before Pandemic (PHB-CABP-11)* (N=118)

	N	%
Mean Physical Health Before COVID-19 (4.55), SD (.873), min (3), max (6)		
Mean Physical Health During COVID-19 (4.13), SD (1.136), min (1), max (6)		
Mean Mental/Emotional Health Before COVID-19 (4.35), SD (1.033), min (2), max (6)		
Mean Mental/Emotional Health During COVID-19 (3.66), SD (1.262), min (1), max (6)		
Mean BMI (27.68), SD (6.09), min (17.16), max (47.23)		
COVID-19 in the Past Year or May Still Have It (Long hauler) (N=118)		
Yes	22	18.6
No	83	70.3
Not Sure	13	11.0
I think COVID-19 is a "Hoax" (N=118)		
No	118	100
Before COVID-19 Pandemic, Physical Health Status (N=118)		
3-Fair	14	11.9
4-Good	41	34.7
5-Very Good	47	39.9
6-Excellent	16	13.6

Table 5 (continued)

	N	%
During the COVID-19 Pandemic, Physical Health Status (N=118)		
1-Very Poor	1	.8
2-Poor	6	5.1
3-Fair	32	27.1
4-Good	30	25.4
5-Very Good	38	30.5
6-Excellent	13	11.0
Before COVID-19 Pandemic, Mental/Emotional Health Status (N=118)		
2-Poor	4	3.4
3-Fair	22	18.6
4-Good	36	30.5
5-Very Good	41	34.7
6-Excellent	15	12.7
During the COVID-19 Pandemic, Mental/Emotional Health Status (N=118)		
1-Very Poor	5	4.2
2-Poor	13	11.0
3-Fair	41	34.7
4-Good	27	22.9
5-Very Good	22	18.6
6-Excellent	10	8.5

Also, paired t-tests showed significant differences when comparing the before COVID-19 pandemic mean rating of physical health status (M=4.55, SD=.873), versus the during the pandemic physical health status mean rating (M=4.13, SD=1.136), as a difference that was statistically significant (t=5.168, df =117, p=.000).

Further, paired t-tests showed significant differences when comparing the before COVID-19 pandemic mean rating of mental/emotional health status (M=4.35, SD=1.033), versus the during the pandemic mental/emotional health status mean rating (M=3.66, SD=1.262), as a difference that was statistically significant (t=6.983, df=117, p=.000).

Hence, both physical and mental/emotional health status declined significantly from pre-pandemic to during the pandemic.

See Table 6.

Table 6. *Comparison of Health Status Before and During Pandemic*

	Pre Versus During COVID–19			*t*-tests		
Personal Health Background	N	M	SD	*T*	Df	P
Physical Health				5.168	117	0.000***
Pre-COVID-19	118	4.55	.873			
During COVID-19	118	4.13	1.136			
Mental/Emotional Health				6.983	117	0.000***
Pre-COVID-19	118	4.35	1.033			
During COVID-19	118	3.66	1.262			

Note: *p<.05, **p<.01, ***p<.001
All p values above .05 are considered non-significant, and only those below .05 are considered statistically significant.

Results for Research Question #5

To what extent did they tend to provide socially desirable responses to questions? ***(SIR-RPSDR-1)***

Part V: Single Item Rating of Risk of Providing Socially Desirable Responses (SIR-RPSDR-1)

The sample's social desirability mean was 4.12 (min=0, max=10, SD=3.002), suggesting a low moderate risk for providing socially desirable responses. Of note, the regression analysis will control for social desirability.

See Table 7.

Table 7. *Single Item Rating of Risk of Providing Socially Desirable Responses (SIR-RPSDR-1)* (N=118)

	N	%
Mean Social Desirability (4.12), SD (3.002), min (0), max (10)		
I sometimes say things that I think will please people, or what I think they want to hear—versus the honest truth, which might be difficult or painful for other people to hear and accept, or might lead them to judge me harshly.		
0 - I am not like this at all	24	20.3
1	08	6.8
2	11	9.3
3	07	5.9
4	09	7.6
5	14	11.9
6	09	7.6
7	19	16.1
8	12	10.2
9	4	3.4
10 - I am like this all the time	1	.8

Results for Research Question #6

*What level of social support did they report having at the present time (i.e., from 0 to 6 or more people)? And, how many people who used to provide them with social support died during the COVID-19 pandemic, or experienced a change in their circumstances—so they can no longer provide support? (**PSSS-3)***

Part VI: Perceived Social Support Scale (PSSS-3)

The perceived social support mean was 3.88 (min=1, max=5, SD=1.006) for closest to category 4—for closest to high social support, having at least 3-5 people like that in their life right now (i.e. providing social support).

While the majority (82.2%, N=97) had not lost social support in the past year due to deaths from COVID-19, 5.9% (N=7) had lost one person and 6.8% (N=8) had lost two people to death from COVID-19. Similarly, the majority (70.3%, N=83) had not lost social support due to people having a change in their circumstances during the pandemic, while 13.6% (N=16) had lost social support from 1 person due to a change in their circumstances, 7.6% (N=9) had lost

social support from 2 persons, and 5.9% (N=7) had lost social support from 3 persons for that reason.

See Table 8.

Table 8. *Perceived Social Support Scale (PSSS-1)* (N=118)

	N	%
Mean Social Support (3.88), SD (1.006), min (1), max (5)		
Extent of Social Support Experienced Right Now (N=118)		
1-I have no one like that in my life right now	2	1.7
2-I have at least one person like that in my life right now	11	9.3
3-I have at least two people like that in my life right now	22	18.6
4-I have at least 3-5 people like that in my life right now	47	39.8
5-I have 6 or more two like that in my life right now	36	30.5
How many people who used to provide you with social support died during the COVID-19 pandemic (N=118)		
0	97	82.2
1	07	5.9
2	08	6.8
3	01	.8
4	01	.8
5	02	1.7
7	01	.8
13	01	.8
How many people experienced a change in their circumstances—so they can no longer provide social support to you (N=118)		
0	83	70.3
1	16	13.6
2	09	7.6
3	07	5.9
4	02	1.7
5	01	. 8

Results for Research Question #7

What did they report as their overall quality of life? ***(RYQOL-S-1)***

Part VII: Rating Your Quality of Life Scale (RYQOL-S-1)

The quality of life mean was 4.20 (min=1, max=6, SD=1.230) for closest to a good quality of life. Some 68.6% (N=81) rated their quality of life as good, very good, or excellent, while only 8.4% (N=10) rated their quality of life as poor or very poor.

See Table 9.

Table 9. *Rating Your Quality of Life Scale (RYQOL-S-1)* (N=118)

	N	%
Mean Social Support (4.20), SD (1.230), min (1), max (6)		
Self-Rated Quality of Life (N=118)		
1-Very poor	1	.8
2-Poor	9	7.6
3-Fair	27	22.9
4-Good	28	23.7
5-Very Good	34	28.8
6-Excellent	19	16.1

Results for Research Question #8

How did they rate their past-year COVID-19 related stress, given the possibilities of stress related to shopping, work, money, food, housing, school, technology, and societal changes (0-no stress to 10-extreme stress)? And, how did they rate their past year cultural stress related to society's increasing hate and violence toward immigrant arrivals, and by extension, members of the Latinx population? ***(PY-CRS-ACS-2).***

Part VIII Past-Year COVID-19 Related Stress—And Cultural Related Stress (PY-CRS-ACS-2)

For past year COVID-19 related stress the mean was 6.43 (min=0, max=10, SD=2.44) for moderately high. Of note, 70.3% (N=83) had experienced moderately high to maximum/extreme stress (scores 6 to 10) in their lives in the past year that was related to COVID-19.

For past year cultural stress the mean was 4.10 (min=0, max=10, SD=3.193), for moderately low. For example, 53.4% (N=63) had experienced moderately low to no cultural stress (scores 4 to 0) in the past year. On the other hand, 46.5% (N=55) had experienced moderate to maximum/extreme cultural stress (scores 5 to 10) in the past year.

See Table 10.

Table 10. *Past-Year COVID-19 Related Stress—and Cultural Stress (PY-CRS-ACS-2)* (N=118)

	N	%
Mean Past Year COVID-19 Related Stress (6.43), SD (2.44), min (0), max (10), and Mean Past Year Cultural Stress (4.10), SD (3.193), min (0), max (10)		
Stress in your life in the past year that was related to COVID-19 (N=118)		
0-No stress	3	2.5
1	3	2.5
2	5	4.2
3	3	2.5
4	11	9.3
5	10	8.5
6	12	10.2
7	28	23.7
8	23	19.5
9	9	7.6
10- Maximum extreme stress	11	9.3
Stress in your life in the past year that was related to cultural stress (N=118)		
0-No stress	19	16.1
1	17	14.4
2	9	7.6
3	10	8.5
4	8	6.8
5	17	14.4
6	9	7.6
7	7	5.9
8	7	5.9
9	7	5.9
10- Maximum extreme stress	8	6.8

Results for Research Question #9

What was reported for any past year depression, anxiety, or trauma—as well as for engagement in counseling (yes/no)? ***(R-DATS-4)***

Part IX: Retrospective Depression, Anxiety, and Trauma Scale (R-DATS-4)

The variables for participants' past year experience of depression, anxiety, and trauma combined to create a score for *mental distress* with a mean of 1.79 (min=0, max=3, SD=1.061) for closest to a moderate level of mental distress in the past year. Some 66.9% (N=79) reported depression in the past year, 78.8% (N =39) reported trauma. Some 44.1% (N=52) had sought counseling in the past year.

See Table 11.

Table 11. *Retrospective Depression, Anxiety, and Trauma Scale (R-DATS-4)* (N=118)

	N	%
Mean Mental Distress (1.79), SD (1.061), min (0), max (3)		
Experienced Depression in the past year or 12 months (N=118)		
Yes	79	66.9
No	39	33.1
Experienced any Anxiety in the past year or 12 months (N=118)		
Yes	93	78.8
No	25	21.2
Experienced any Trauma in the past year or 12 months (N=118)		
Yes	39	33.1
No	79	66.9
Sought Counseling or advice for any Depression, Anxiety, or Trauma—such as from a Mental Health Professional, or other helper, or Family Member (N-118)		
Yes	52	44.1
No	54	45.8
No Experience of Trauma Anxiety or Depression	12	10.2

Results for Research Question #10

Upon taking the new "Our COVID-19 Knowledge Test," what was the level of knowledge for this Latinx sample (true, false)? ***(OCKT-44)***

Part X: Our COVID-19 Knowledge Test (OCKT-44)

The COVID-19 knowledge score mean was 40.49 (min=13, max=44, SD=4.228), for very high COVID-19 knowledge. The sample had the highest levels of knowledge (i.e. 100%, N=118), answering true for the following:

3*-When a person infected with COVID-19 coughs, sneezes – or breathes, talks, sings or shouts – COVID-19 is spread (transmitted) as droplets in the air.*

29*-Possible symptoms of COVID-19 are fever, dry cough, trouble breathing, fatigue (tired), headaches, body aches, diarrhea, loss of taste or smell – and memory and concentration problems (called "brain fog").*

31*-Symptoms of COVID-19 usually appear 2 to 14 days after exposure to someone infected with it: this is called the 2- to 14- day incubation period for the disease: and most people show symptoms by day 5.*

32*-During the 2- to 4- day incubation period for COVID-19, a person may show no symptoms, but can still transmit or spread it to others.*

On the other hand, the lowest areas of knowledge were for:

19*-People already living with a mental illness (e.g. depression), are at a much higher risk of getting COVID-19 (65% more likely)*, but scored 48.3%, with only N=57 endorsing True.

21*-Men are much more likely than women to die from COVID-19* (i.e. 66.9%, or only N=79 endorsed True).

See Table 12.

Table 12. *Our COVID-19 Knowledge Test (OCKT-44*)

	N	%
Mean COVID-19 Knowledge Score (40.49), SD (4.228), min (13), max (44)		
1-Severe acute respiratory syndrome coronavirus2 (SARS-CoV-2) is responsible for the disease known as COVID-19 (N=118)		
True	113	95.8
False	5	4.2
2-COVID-19 is a very serious, highly contagious disease that is easily spread (transmitted), may cause severe illness and death, and is much more deadly than the flu (N=118)		
True	114	96.6
False	4	3.4
3-When a person infected with COVID-19 coughs, sneezes—or breathes, talks, sings, or shouts—COVID-19 is spread (transmitted) as droplets in the air (N=118)		
True	118	100
4-COVID-19 droplets can remain in the air of a room and on surfaces (tabletops, etc.) for many hours; that is why people are told to open windows, circulate air, and clean and disinfect all surfaces in rooms (N=118)		
True	107	90.7
False	11	9.3
5-COVID-19 droplets in the air can circulate(travel) throughout a large room (office building, restaurant, church/mosque/temple, etc.) and infect people there (N=118)		
True	105	89
False	13	11
6-To prevent the spread of COVID-19 it is recommended to maintain a social distance from other people of at least 6 feet (N=118)		
True	116	98.3
False	2	1.7
7-To prevent the spread (transmission) of COVID-19 a person should wear a face mask that covers the nose and mouth (N=118)		
True	117	99.2
False	1	.8
8-If a mask is NOT worn consistently and correctly (over nose and mouth), or is too loose, or has large gaps on sides, then it may not be providing enough protection from COVID-19 transmission (spreading) (N=118)		
True	116	98.3
False	2	1.7

Table 12 (continued)

	N	%
9-Early in the pandemic, people were NOT told to wear face masks, because there was a shortage of masks in the U.S.; and medical staff needed the limited supply (N=118)		
True	90	76.3
False	28	23.7
10-N95 respirator masks provide the best protection, surgical masks provide acceptable protection: and, NOT recommended are bandanas, scarves, gators, or masks with valves (N=118)		
True	112	94.9
False	6	5.1
11-Some people have a bad habit of pulling down their face mask to talk; and doing so puts them at risk for the spread of COVID-19 (N=118)		
False	115	97.5
True	3	2.5
12-To lower chances of spreading COVID-19 when visiting with other people, it is recommended to be outdoors, socially distance (staying 6 feet from others who do not live with you), and correctly wear a mask (N=118)		
True	117	92.2
False	1	.8
13-It is not safe to spend time indoors/inside restaurants, bars, or for parties, dinners, or any social event with people not living with you—or not in your "bubble"—since COVID-19 spreads at such events; they could be super spreader events (N=118)		
True	112	94.9
False	6	5.1
14-If someone must enter a home who does not live there (e.g., cable worker to fix Internet), they must wear a mask, and all living there must wear a mask until the worker leaves; opening windows and circulating air help reduce the risk (N=118)		
True	114	96.6
False	4	3.4
15-Those at high risk for a more severe case of COVID-19 with hospitalization are over age 60; or, have lung disease (e.g., asthma), heart disease (e.g., hypertension), diabetes, obesity, HIV/AIDS, or cancer (N=118)		
True	115	97.5
False	3	2.5
16-To prevent the spread of COVID-19, some people combine wearing a face mask with also wearing a face shield when out in public (e.g., going to store) (N=118)		
True	114	96.6
False	4	3.4

Table 12 (continued)

	N	%
17-It is wise for people at high risk for a more severe case of COVID-19 [i.e., over age 60, or with lung disease (e.g., asthma), heart disease (e.g., hypertension), diabetes, etc.] to wear a face shield and a mask when out in public (e.g., going to store) (N=118)		
True	107	90.7
False	11	9.3
18-One in five of the people who had COVID-19 also had anxiety, depression, or insomnia for the first time in their lives—within 3 months of getting COVID-19; and some with COVID-19 are at higher risk for dementia (N=118)		
True	85	72
False	33	28
19-People already living with a mental illness (e.g., depression) are at a much higher risk of getting COVID-19 (65% more likely) (N=118)		
True	57	48.3
False	61	51.7
20-Black people, Latinos, and Native Americans are much more likely to get COVID-19, to get more severe cases requiring hospitalization, and to die from it—compared to White people (N=118)		
True	101	85.6
False	17	14.4
21-Men are much more likely than women to die from COVID-19 (N=118)		
True	79	66.9
False	39	33.1
22-There are "long-haulers" (also called "long COVID-19") who still have one or more ongoing symptoms of COVID-19 after two months or more since first infected; and women are more likely to be long-haulers (N=118)		
True	106	89.8
False	12	10.2
23-The coronavirus that causes COVID-19 has been found on surfaces such as plastic, metal, or cardboard, as well as on money (N=118)		
True	94	79.7
False	24	20.3
24-To prevent the spread of COVID-19 people should wear disposable hand gloves to touch things like gas pumps and shopping carts—or use hand sanitizer after touching them (N=118)		
True	106	89.8
False	12	10.2

Table 12 (continued)

	N	%
25-To prevent the spread of COVID-19 people should wash their hands frequently or use hand sanitizer when they cannot wash their hands (N=118)		
True	117	99.2
False	1	.8
26-If one thinks, "I only have the sniffles, maybe a cold or the flu," they should NOT go to work or be around others, because it could be the very contagious COVID-19 (N=118)		
True	113	95.8
False	5	4.2
27-It is important to break the habit of touching one's face, mouth, nose, and eyes to prevent getting infected with COVID-19 (N=118)		
True	117	99.2
False	1	.8
28-Some adults, adolescents, and children experience very mild or no symptoms of illness when they have COVID-19 (test positive) (N=118)		
True	116	98.3
False	2	1.7
29-Possible symptoms of COVID-19 are fever, dry cough, trouble breathing, fatigue (tired), headaches, body aches, diarrhea, loss of taste or smell—and memory and concentration problems (called "brain fog") (N=118)		
True	118	100
30-People who test positive for COVID-19, but do not have any symptoms of illness are called asymptomatic; and they can still spread COVID-19 to other people (N=118)		
True	117	99.2
False	1	.8
31-Symptoms of COVID-19 usually appear 2 to 14 days after exposure to someone infected with it; this is called the 2- to 14-day incubation period for the disease; and most people show symptoms by day 5 (N=118)		
True	118	100
32-During the 2- to 14-day incubation period for COVID-19, a person may show no symptoms, but can still transmit or spread it to others (N=118)		
True	118	100
33-The purpose of isolation is to separate people who are sick with a contagious disease from those people who are not sick (N=118)		
True	115	97.5
False	3	2.5

Table 12 (continued)

	N	%
34-Anyone sick with COVID-19 should: go into isolation for at least 10 days so they remain separate from people who are not sick; and sleep alone in a separate room without sharing a bathroom or any room/space with others (e.g., kitchen) (N=118)		
True	115	97.5
False	3	2.5
35-A person can leave *isolation* after 10 days if they have no fever for at least 24 hours (and took no medication for fever), and other symptoms are improving (N=118)		
True	104	88.1
False	14	11.9
36-When caring for a person with COVID-19 at home, one must: wear a mask, face shield, gloves, and protective covering over clothing; frequently wash and sanitize hands; clean/disinfect items they use (e.g., plates); wash sheets/clothing/towels separate from other laundry; and carefully dispose of (throw out) things like tissues (N=116)		
True	114	98.3
False	2	1.7
37-It was first recommended that anyone exposed to COVID-19 (around someone testing positive for COVID-19) needs a 14-day quarantine period—to separate themselves and stay away from others so they do not risk exposing others to COVID-19 (N=116)		
True	115	99.1
False	1	.9
38-It was later recommended that anyone exposed to COVID-19 (around someone testing positive for COVID-19) needs to complete a 10-day quarantine; or they can complete a 7-day quarantine with a negative COVID-19 test result (N=116)		
True	105	90.5
False	11	9.5
39-Before seeing in-person someone at high risk for more severe COVID-19 [i.e., over age 60, or with lung disease (e.g., asthma), heart disease (e.g., hypertension), diabetes, etc.] one should complete a quarantine (staying home, away from others)—to reduce chances of spreading COVID-19 to them (N=116)		
True	110	94.8
False	6	5.2
40-Some people think it is enough to show a negative COVID-19 test and have a temperature taken before entering an airplane, cruise ship, or home (e.g., holiday dinner), but that is not enough; all entering needed to have quarantined to reduce risk (N=116)		
True	96	82.8
False	20	17.2

Table 12 (continued)

	N	%
41-A college student or anyone returning home after being away (or travel) needs to complete a quarantine—BEFORE entering that home, because they likely had contact with someone with COVID-19 (N=116)		
True	106	91.4
False	10	8.6
42-If a college student or anyone DID NOT complete a quarantine BEFORE returning home, they must wear a mask at home all the time—except when eating in a separate room or outside (to maintain social distance)—so no one shares their air (N=116)		
True	108	93.1
False	8	6.9
43-Some people have caught COVID-19 a second time, after already having had it; so, everyone needs to continue to wear a mask and socially distance (N=116)		
True	110	94.8
False	6	5.2
44-There is hope about vaccines, since only a very small percentage of people who get the vaccine still get COVID-19; but that also means that wearing a mask will still be important even after wide distribution of a vaccine (N=116)		
True	114	98.3
False	2	1.7

Results for Research Question #11

Upon completion of the "Our COVID-19 Knowledge Test," were they willing to recommend the test to others (to increase knowledge about COVID-19)—effectively diffusing this innovation of new e-health? ***(DOI-OCKT-1)***

Part XI: Diffusion of the Innovation of Our COVID-19 Knowledge Test (DOI-OCKT-1)

After completing the "Our COVID-19 Knowledge Test," 80.2% (N=93) indicated "yes" they would recommend "Our COVID-19 Knowledge Test" to others— diffusing the innovation of learning about COVID-19 via this new e-health.

See Table 13.

Table 13. *Diffusion of the Innovation of Our COVID-19 Knowledge Test) (DOI-OCKT-1)* (N=118)

	N	%
Would you recommend that other adults take "Our COVID-19 Knowledge Test" to assist them in learning the facts about COVID-19?		
No	7	6.0
Yes	93	80.2
Unsure	16	13.8

Results for Research Question #12

When comparing their level of COVID-19 knowledge for before taking the "Our COVID-19 Knowledge Test" versus after taking it, was there a significant difference in how they rated their COVID-19 knowledge? Similarly, was there a significant difference in how they rated their self-efficacy for preventing the transmission of COVID-19 for before taking the "Our COVID-19 Knowledge Test" versus after taking it? ***(C-K-SE-FRRB-4)***

Part XII: COVID-19 Knowledge and Self-Efficacy for Risk Reduction Behaviors (C-K-SE-FRRB-4)

Participants self-rated in quick succession their *COVID-19 knowledge* and *self-efficacy for COVID-19 risk reduction behaviors* for **before** *versus* **after** taking the "Our COVID-19 Knowledge Test." Paired t-tests compared their **before** versus **after taking** the "Our COVID-19 Knowledge Test" mean scores, as follows:

- The *knowledge about COVID-19* mean self-rating for **before** taking the "Our COVID-19 Knowledge Test" (M=4.71, SD=.845) was lower than the mean self-rating for *knowledge about COVID-19* **after** taking the True-False test (M=5.09, SD=.938)—as a significant difference (t= -4.900, df=115, p=.000). This suggested the participants' *self-rated knowledge was higher after taking the "Our COVID-19 Knowledge Test" True-False test.*
- The *self-efficacy for performing COVID-19 risk reduction behaviors* mean self-rating for **before** taking the "Our COVID-19 Knowledge Test" (M=5.16, SD=.844) was lower than

the mean self-rating for *self-efficacy for performing COVID-19 risk reduction behaviors* **after** taking the "Our COVID-19 Knowledge Test" (M=5.39, SD=.835)—as a significant difference (t= -4.023, df=114, p=.000). This suggested the participants' *self-efficacy for performing behaviors COVID-19 risk reduction behaviors was higher after taking the "Our COVID-19 Knowledge Test" True-False test.*

Together, these findings suggested that taking the "Our COVID-19 Knowledge Test" True-False test served as a brief e-health intervention that had a positive impact on participants' *COVID-19 knowledge* and *self-efficacy for COVID-19 risk reduction behaviors.*

See Table 14.

Table 14. *COVID-19 Knowledge and Self-Efficacy for Risk Reduction Before Versus After Taking Our COVID-19 Knowledge Test*

	Before Versus After Taking Our COVID-19 Knowledge True-False Test			Paired t-tests		
	N	M	SD	T	Df	P
COVID-19 Knowledge Scale				-4.800	115	0.000***
Before COVID-19 Knowledge test	116	4.71	.845			
After COVID-19 Knowledge test	116	5.09	.938			
COVID-19 Prevention Self-Efficacy Scale				-4.023	114	0.000***
Before COVID-19 Knowledge test	115	5.16	.844			
After COVID-19 Knowledge test	115	5.39	.835			

*p<.05, **p<.01, ***p<.001
Note: All p values above .05 are considered non-significant, and only those below .05 are considered statistically significant.

Results for Research Question #13

What is their intention with regard to taking a COVID-19 vaccine once it is made available to them, or have they already received it (yes/no)? ***(IVC-1)***

Part XIII: Intention to Vaccinate for COVID-19 (IVC-1)

Some 87.0% (N=100) indicated "yes" for intending to receive COVID-19 vaccination or already having received the vaccine. Only 2.6% (N=3) said they will not receive the vaccine when made available to them, while 3.5% (N=4) were not sure.

See Table 15.

Table 15. *Intention to Vaccinate for COVID-19 (IVC-1)*

	N	%
Will YOU get a COVID-19 vaccination when it becomes available to you?		
Yes	17	14.8
Yes, already received	83	72.2
Probably	8	7.0
Not Sure	4	3.5
No	3	2.6

Results for Research Question #14

Were there any significant relationships between selected independent variables with each of the two study outcome variables for: (1) COVID-19 knowledge test score (i.e. on Our COVID-19 Knowledge Test); and, (2) self-efficacy for preventing COVID-19 transmission—specifically for the after-taking "Our COVID-19 Knowledge Test" self-efficacy self-rating?

Independent T-Tests Comparing Groups

For the first study outcome variable of a **higher COVID-19 knowledge test score on** "**Our COVID-19 Knowledge Test" (OCKT-44)**, 11 dichotomous groups were compared (Bonferroni Adjustment Significance, .05/11= .0045, p=.0045). No group comparisons were significant.

See Table 16.

Table 16. *Our COVID-19 Knowledge Test (OCKT-44) Scores: Comparison of Groups*

	Level of Knowledge on Our COVID-19 Knowledge Test			*Independent t-tests*		
	N	**M**	**SD**	**T**	**df**	**P**
Gender				1.97	116	.772
Female	95	40.55	3.398			
Male	23	40.26	6.757			
Born in the US				.600	116	.550
No	37	40.84	3.202			
Yes	81	40.33	4.631			
Partnered				.892	116	.374
No	60	40.83	3.054			
Yes	58	40.14	5.176			
Child/Children				1.796	116	.075
No	66	41.11	4.507			
Yes	52	39.71	3.743			
If Employed				-1.233	51.924	.223
No	40	39.70	5.698			
Yes	78	40.90	3.197			
Had Stable Work				1.199	116	.233
No	36	41.19	3.232			
Yes	82	40.18	4.582			
Sought Counseling				-1.519	116	.132
No	66	39.97	4.918			
Yes	52	41.15	3.064			
Work Related COVID-19 Risk				-.982	109.795	.328
No	67	40.18	4.991			
Yes	51	40.90	2.941			
Lost Job during COVID-19				1.515	13.579	.153
No	104	40.88	3.275			
Yes	14	37.57	8.093			
Lost Social Support				1.821	116	.071
No	76	41.01	3.372			
Yes	42	39.55	5.366			
Had COVID-19				1.970	116	.051
No	96	40.85	4.037			
Yes	22	38.91	4.760			

*p<.05, **p<.01, ***p<.001 Bonferroni Adjustment Significance (.05/11, p= .005). Note: All p values above .005 are considered non-significant; and only those below .005 are considered statistically significant.

For the second study outcome variable of a **higher self-efficacy for preventing COVID-19 transmission—specifically for the after-taking "Our COVID-19 Knowledge Test" self-efficacy self-rating,** 11 dichotomous groups were compared (Bonferroni Adjustment Significance .05/11= .0045, p=.0045). There was only one significant group comparison:

- **Those who had <u>not</u> lost social support in the past year ("no") had a higher mean self-efficacy level for performing COVID-19 risk reduction behaviors** (M=5.58, SD=.618, N=74) in comparison to the mean self-efficacy level of those who had lost social support ("yes") in the past year (M=5.05, SD=1.048, N=41)—achieving significance (t=2.978, df=55.85, p=.004).

  See Table 17.

Table 17. *COVID-19 Prevention Self-Efficacy Scale Scores Post-Test-Taking OCKT-44: Comparison of Groups*

	Level of Self-Efficacy Post COVID-19 Knowledge Test			***Independent t-tests***		
	N	**M**	**SD**	**T**	**df**	**P**
Gender				1.34	25.541	.894
Female	93	5.40	.754			
Male	22	5.36	1.136			
Born in the US				.170	113	.866
No	34	5.41	.701			
Yes	81	5.38	.888			
Partnered				2.111	113	.037
No	58	5.55	.680			
Yes	57	5.23	.945			
Child/Children				-.1091	113	.277
No	66	5.32	.931			
Yes	49	5.49	.681			
If Employed				-.443	113	.659
No	38	5.34	.994			
Yes	77	5.42	.750			
Had Stable Work				.700	113	.485
No	36	5.47	.654			
Yes	79	5.35	.906			

Table 17 (continued)

	Level of Self-Efficacy Post COVID-19 Knowledge Test			*Independent t-tests*		
	N	**M**	**SD**	**T**	**df**	**P**
Sought Counseling				-1.552	113	.123
No	66	5.29	.941			
Yes	49	5.53	.649			
Work Related COVID-19 Risk				-1.595	113	.114
No	64	5.28	.881			
Yes	51	5.53	.758			
Lost job During COVID-19				1.356	113	.178
No	103	5.43	.736			
Yes	12	5.08	1.443			
Lost Social Support				2.978	55.85	.004**
No	74	5.58	.619			
Yes	41`	5.05	1.048			
Had COVID-19				-.394	113	.694
No	93	5.38	.859			
Yes	22	5.45	.739			

*p<.05, **p<.01, ***p<.001 Bonferroni Adjustment Significance (.05/11, p= .0045). Note: All p values above .005 are considered non-significant; and only those below .005 are considered statistically significant.

Pearson Correlations

For the first study outcome variable of a **higher COVID-19 knowledge test score on** "**Our COVID-19 Knowledge Test**," associations were sought with 14 independent variables. One Pearson correlation was significant, showing that **the higher the COVID-19 knowledge test score on the** "**Our COVID-19 Knowledge Test**," then the:

- **Lower** the risk of COVID-19 transmission in the home (r= -272, p= .003)

  See Table 18.

Table 18. *Correlations Between Selected Variables and Our COVID-19 Knowledge Test (OCKT-44)*

	Pearson's R	P
Lower Age	-.053	.566
Lower Education Level	-.066	.481
Lower Annual Household Income	-.009	.919
Lighter Skin Color	-.072	.438
Lower BMI (Body Mass Index)	-.080	.390
Better Physical Health Sts. During COVID-19	.097	.295
Better Mental Health Sts. During COVID-19	.060	.516
Smaller Household Size	-.043	.647
Lower COVID-19 Risk in Home	-.399	.000***
Greater Social Support (number of people)	.146	.113
Higher Quality of Life	.127	.171
Less COVID -19 Related Stress Past Year	-.045	.631
Greater Cultural Stress Past Year	.047	.614
Lower Mental Distress Past Year	-.084	.364

*p<.05, **p<.01, ***p<.001 Bonferroni Adjustment Significance (.05/14, p= .004).
Note: All p values above .004 are considered non-significant; and
only those below .004 are considered statistically significant.

For the second study outcome variable of a **higher self-efficacy for performing COVID-19 risk reduction behaviors—specifically for the after-taking "Our COVID-19 Knowledge Test" self-efficacy self-rating,** associations were sought with 14 independent variables. Three Pearson correlations were significant, showing **the higher the self-efficacy for performing COVID-19 risk reduction behaviors—specifically for the after-taking "Our COVID-19 Knowledge Test" self-efficacy self-rating**, then the:

- **Lighter** the skin color (r= -.245, p=.008)

- **Better** the physical health status during the COVID-19 pandemic (r= .369, p= .000)
- **Better** the mental health status during the COVID-19 pandemic (r= .320, p= .000)
- **Lower** the risk of COVID-19 transmission in the home (r= -272, p= .003)

See Table 19.

Table 19. *Correlations Between Selected Variables and Level of Self-Efficacy for COVID-19 Risk Reduction Post-OCKT-44-Test-Taking*

	Pearson's R	P
1. Higher Age	.149	.113
2. Lower Education Level	-.086	.361
3. Higher Annual Household Income	.053	.571
4. Lighter Skin Color	-.245	.008
5. Lower BMI (Body Mass Index)	-.154	.102
6. Better Physical Hlth Sts. During COVID-19	.369	.000*
7. Better Mental Hlth Status During COVID-19	.320	.000*
8. Smaller Household size	-.060	.527
9. Lower COVID-19 Risk in Home	-.272	.003*
10. Higher Social Support (more people)	.169	.070
11. Higher Quality of Life	.289	.002
12. Lower COVID-19 Related Stress Past Year	-.147	.117
13. Lower Cultural Stress Past Year	-.007	.415
14. Lower Mental Distress Past Year	-.028	.768

*p<.05, **p<.01, ***p<.001 Bonferroni Adjustment Significance (.05/14, p= .004).
Note: All p values above .004 are considered non-significant; and only those below .004 are considered statistically significant.

Results for Research Question #15

While controlling for social desirability, what were the significant predictors of the two study outcome variables of: (1) a higher COVID-19 knowledge test score (i.e., on Our COVID-19 Knowledge Test); and, (2) a higher self-efficacy for preventing COVID-19 transmission—specifically for the after-taking "Our COVID-19 Knowledge Test" self-efficacy self-rating?

Backward Stepwise Regression

Backward stepwise regression was used to identify significant predictors of (1) **a higher COVID-19 knowledge test score (i.e. on Our COVID-19 Knowledge Test)**; and, (2) **a higher self-efficacy level for performing COVID-19 risk reduction behaviors—specifically for the after-taking "Our COVID-19 Knowledge Test" self-efficacy self-rating**—while using the following 25 independent variables:

1. age (continuous)
2. gender (male/female)
3. skin color tone (continuous)
4. if born in the U.S. (yes/no)
5. if has a partner (yes/no)
6. has children (yes/no)
7. level of education (continuous)
8. annual household income (continuous)
9. currently employed (yes/no)
10. if any work-related COVID-19 risk (yes/no)
11. lost employment during COVID-19 (yes/no)
12. if has stable work pre-COVID-19 (yes/no)
13. household size (continuous)
14. extent of COVID-19 transmission risk in home (continuous)
15. Body Mass Index (BMI) (continuous)
16. if had COVID-19 (yes/no)
17. physical health status during COVID-19 (continuous)
18. mental health status during COVID-19 (continuous)
19. level of social support (continuous)
20. level of quality of life (continuous)
21. level of COVID-19 related stress (continuous)
22. level of cultural stress (continuous)
23. mental distress past year (depression, anxiety, trauma) (continuous)
24. if sought mental health counseling in the past year (yes/no)
25. if lost social support due to death/change in status (yes/no)

Rationale for Using Backward Stepwise Regression

As per Olubi et al. (2021), with regard to "backward selection, stepwise regression is a self-determining process" in the "selection of independent variables" (p. 134). Others have noted how backward stepwise regression "starts from the full model and eliminates effect modifiers according to a criterion" (Seo et al., 2021, p. 1556).

Similarly, Guidolin and Pedio (2021) indicated "we rely on stepwise regression, an automatic variable selection procedure, which chooses from a set of candidate regressors the explanatory variables that are, jointly, the most relevant" (p. 8). The "automatic procedure then identifies the most significant variables at each step of the selection, based on given criteria" (p. 4). Guidolin and Pedio explained further how backward elimination "starts with all candidate variables, testing the deletion of each variable using a chosen model-fit criterion, deleting the variable (if any) whose exclusion gives the less statistically significant deterioration of the model fit;" and, then "repeating this process until no further variables can be deleted without a statistically significant loss of fit" (Guidolin & Pedio, 2021, p. 9).

In the present study, social desirability is forced into the model at each step, thereby controlling for the risk of providing socially desirable responses. Also, in this study the criterion is set at $p < .05$.

For Babyak (2004), the use of such a liberal $p < .05$ criterion makes backward stepwise regression the least harmful of the stepwise procedures, permitting important variables to be retained in the model. This outweighs the risk of potentially including unimportant variables in the regression analysis (Babyak, 2004).

Of note, it is possible to include "too few interactions" which "runs the risk of missing important" variables (Seo et al., 2021, p. 1554). Seo et al. acknowledged the issues with complex models that may lead to "overfitting" (p. 1554).

The present study may be criticized for the risk of overfitting, given the use of 25 independent variables in each of the two regression models. However, the intent is to not risk missing important variables.

Furthermore, Babyak (2004) warned that there is the risk of backward stepwise regression producing findings that cannot be replicated. Or, the findings produced do not actually exist in the population of focus.

Other COVID-19 Pandemic Era Research Using Backward Stepwise Regression

In the current contemporary times, backward stepwise regression has been used in other COVID-19 era research studies. For example, Rannan-Eliya et al. (2021) utilized stepwise backward selection, while forcing some variables into their model, arriving at a final model that explained "81 percent (adjusted R2=0.81) of the variation in average COVID-19 transmissibility across countries" (Rannan-Eliya, 2021, p. 74).

In other COVID-19 research, Vaz (2021) reported that "backward stepwise regression was conducted" to "create an optimum selection" of variables (p. 4). Vaz further explained that this "stepwise regression approach allowed for the use of a full list of available neighborhood variables for the city Toronto and the integration of a step elimination process so as to offer a reduced model with enhanced explanatory performance" (p. 4). More specifically, the stepwise backward regression model served to identify "key variables influencing the spread of COVID-19 in Toronto" (Vaz, 2021, p. 1).

On the other hand, Ho et al. (2021) also noted how there have been numerous studies that discussed the potential flaws in using stepwise regression. These included potential problems of multicollinearity, overfitting, and the selection of nuisance variables rather than useful variables. Ho et al. noted how, in their COVID-19 research predicting student satisfaction with emergency remote learning in higher education, "stepwise multiple regression including the combination of the forward and backward selection techniques" was used—as a technique that has been "widely adopted for high efficiency" (Ho et al., 2021, p. 6).

Thus, with recognition of the potential flaws, problems, as well as possible benefits, the present study used backward stepwise regression in the present COVID-19 era research study.

This Study's Backward Stepwise Regression Findings

First, controlling for social desirability, using backward stepwise regression, the significant predictors of a **higher COVID-19 knowledge test score on** "**Our COVID-19 Knowledge Test"** were found to be:

- "no" for if has stable work pre-COVID-19 (b = -2.182, SEB=.929, p = .021)
- "yes" for currently employed (b= 2.289, SEB=.883, p=.011)
- "low" extent of COVID-19 transmission risk in home (b=-2.290, SEB=.515, p=000)
- "no" for if had COVID-19 (b= -1.908, SEB=.916, p=.040)

Here, 22.1% of the variance was explained by this model (R^2= 0.254, Adjusted R^2= 0.221; F=7.573, p=000).

See Table 20.

Table 20. *Backward Stepwise Regression for Outcome Variable #1 of Level of COVID-19 Knowledge Based on Our COVID-19 Knowledge Test (OCKT-44) Score*

Variables	B	SE_B	P
"No" for if has stable work pre-COVID-19	-2.182	.929	.021*
"Yes" for currently employed	2.289	.883	.011*
"Low" COVID-19 transmission risk in home	-2.290	.515	.000***
"No" for if had COVID-19	-1.908	.916	.040*

**p<.05,* **p<.01, ***p<.001, *R^2 = (0.254), Adjusted R^2= (0.221) –meaning 22.1% of variance was explained by this model.*
F= 7.573 p=.000

Second controlling for social desirability, using backward stepwise regression, the significant predictors of a **higher self-efficacy for performing COVID-19 risk reduction**

behaviors—specifically for the after-taking "Our COVID-19 Knowledge Test" self-efficacy self-rating were found to be:

- "no" for if has partner (b = -.353, SEB=.126, p = .006)
- "yes" for if received counseling past year (b= .385, SEB=.131, p=.004)
- "low" risk of COVID-19 transmission in home (b = -.348, SEB=.093, p= .000)
- lighter skin color tone (b= -.147, SEB=.052, p=.006)
- better physical health status during COVID-19 (b= .284, SEB=.057, p= .000)

Here, 36.3% of the variance was explained by this model (R^2= 0.397, Adjusted R^2 = 0.363; F= 11.720, p=.000).

See Table 21.

Table 21. *Backward Stepwise Regression for Outcome Variable #2 of Level of Self-Efficacy COVID-19 Risk Reduction Behaviors Post (OCKT-44) Test Taking Score*

Variables	B	SE_B	P
"No" for if has partner	-.353	.126	.006**
"Yes" for if received counseling past year	.385	.131	.004**
"low" risk of COVID-19 transmission in home	-.348	.093	.000***
Skin Color- Lighter	-.147	.052	.006**
Physical Health During COVID-19 –Better	.284	.057	.000***

**p<.05,* **p<.01, ***p<.001, *R^2 = (0.397), Adjusted R^2= (0.363) –meaning 36.3% of variance was explained by this model.*
F= 11.720, p=.000

Conclusion

This chapter presented the results of data analysis. Findings were presented by research question, and summarized in table format.

The next Chapter, V, will present a summary of the study, discussion of results, implications, recommendations, limitations of the study, as well as a final conclusion.

Chapter 5: Summary, Discussion, and Conclusion with Implications, Recommendations, and Limitations

This chapter will provide a summary of the dissertation, including summaries of the literature review, study methods, and study procedures. The chapter will also provide a discussion of the results of data analysis. Finally, this chapter will provide the study conclusion—with implications, recommendation and limitations of the study.

Summary of Literature Review

As per Roozenbeek et al. (2020), the first human infection of SARS CoV-2 novel coronavirus (COVID-19) was reported in "December 2019 in Wuhan, China" (p. 1). Only three months had passed when COVID-19 had spread around the world, igniting a "global public health emergency" (p. 1). The United States declared a national emergency on March 13, 2020, given how COVID-19 had spread to 49 states (Tanne et al., 2020).

According to the American Medical Association (AMA, 2020), Latinx communities in the United States make up 18% of the population, but accounted for 33% of the COVID-19 cases, "revealing the disproportionate toll on the community" (p. 2). For example, in New York State, "Latinx account for 19.2% of the state population," yet they accounted for above one-third (34%) of the fatalities across the state (p. 2). Meanwhile, nationwide, there was the problem of a "lack of consistent and reliable reporting of Latinx ethnic data for testing and fatalities"—which effectively concealed the "true magnitude of COVID-19 on the Latinx community" (AMA, 2020, p. 2).

Fortuna et al. (2020) acknowledged how the Hispanic community had historically been hurt, and continually suffers by being the "most disenfranchised among the U.S. population who are disproportionately harmed physically, emotionally, economically, and educationally" (p. 443). COVID-19 had become another profound, intolerable tragedy for this population. Evidence showed that it “is highly likely that preexisting inequities are at the root of the disproportionate impact of the COVID-19 epidemic on racial-ethnic minorities in the United States" (Fortuna et al., 2020, p. 443).

Cannon (2020) asserted that the COVID-19 “virus itself may not discriminate, but long-standing inequality and structural racism in the United States have created the conditions that have allowed COVID to disproportionately ravage communities of color” (p. 204). Further, the real underlying condition has been described as injustice. This population’s lack of access to healthcare and adequate, valid, reliable health information is considered injustice. Racial and ethnic inequality means continuing health disparities in historically underrepresented minorities in the United States. This has led to a lack of access to health information, opportunity, and higher death rates among communities in need (p. 204). The immediate call for an awareness of the roots of discrimination has been critical. Discrimination has been identified as a leading factor in health disparities and the higher morbidity and mortality in Latinx persons (Cannon, 2020).

Clay et al. (2021) identified multiple factors that appeared to be operating during the COVID-19 pandemic, which seemed to be contributing to higher rates of morbidity and mortality for the Latinx. What was discovered as contributing to health disparities, included a higher proportion of Latinx individuals reporting significant challenges involving accessibility issues (e.g., smart telephones, reliable internet access). The Latinx also faced significantly longer wait times to see providers, as well as the problem of closed health facilities in their

communities, in comparison to other groups. Also identified were affordability issues, as the Latinx reported concern and worry regarding their ability to pay for services when seeking to access health care, in comparison to other groups. These factors led to Latinx being more vulnerable to morbidity and mortality from COVID-19, as serious factors needing to be addressed and corrected (Clay et al., 2021).

Williams et al. (2020) reported that Blacks and Hispanics were more likely to be employed as essential workers because many worked in high-contact labor, as well as in the health care and food service industries. As a result, such essential workers have been working throughout the entire COVID-19 pandemic. These essential workers have often worked without adequate personal protection equipment, or PPE, throughout the pandemic, resulting in higher COVID-19 morbidity and mortality (Williams et al., 2020).

Quandt et al. (2020) discussed how undocumented immigrant farm workers, also considered essential workers, were unable to stay at home during the COVID-19 pandemic. As undocumented workers, this community was "excluded from the social safety net provided by the Coronavirus Aid, Relief and Economic Security (CARES) Act" (p. 1). By working during the COVID-19 pandemic, these essential farmworkers urgently needed access to "knowledge and preventive behaviors" that were critical "to reduce COVID-19 spread in the community" (Quandt et al., 2020, p. 1).

It has been considered critical for communities to have access to valid sources of health information in order to be self-efficacious and take personal control of over their health (Braveman et al., 2014). Such access to valid and evidence-based health information has not always existed.

The year 2020 was characterized by the government providing inconsistent and unscientific messaging during the COVID-19 pandemic (Tanne et al., 2020). American

communities of color emerged even more distrustful of new vaccines for COVID-19, which were needed to mitigate the virus and the spread of COVID-19 (Tanne et al., 2020).

This pervasive reality led Roozenbeek et al. (2020) to conclude that the Trump administration's campaign of "misinformation about the COVID-19 pandemic is a serious threat to both public health and international relations, ranging from the proliferation of damaging health advice, such as ingesting bleach, to politically motivated conspiracies about where the virus originated from" (p. 1). As a result, "the proliferation of false and misleading information about the virus, how it spreads, how to cure it and who is 'behind' it, has prompted the World Health Organization" to issue a warning. Specifically, they warned of "an ongoing 'infodemic'" as a consequence of such Trump Administration misinformation campaigns (Roozenbeek et al., 2020, p. 1).

Jaiswal et al. (2020) indicated that health disinformation spread by Republican-leaning media venues and public officials had also led to disproportionate rates of morbidity and mortality in some communities. For example, the resultant lack of access to valid health information was viewed as having translated into Latinx populations being "disproportionately affected by COVID-19 infection, morbidity, and mortality" (Jaiswal et al., 2020, p. 2777).

Others identified potential factors impacting the Latinx populations at this time of pandemic. For example, Vos et al. (2021) offered the concept of cultural stress. This can include "immigration-related stress," and stress from "language brokering," as well as "bicultural stress" (p. 218). Cultural stress also encompassed "worries surrounding documentation issues and fears of deportation" (p. 218). Such cultural stress was viewed as having become more prominent during an era of a rise in deportations and hate crimes toward Latinos (Vos et al., 2021, p. 218).

Anti-immigration policies have been recognized as a stressor for Latinx populations by others, as well. For example, the American Medical Association (AMA, 2020) focused on how

at risk Latinx communities were more vulnerable to COVID-19 due to many factors, including: a lack of vital health information; native language/communication barriers; anti-immigration policies; socioeconomic vulnerabilities and lack of access to care; lack of access to technology; historical disenfranchisement and racism; and, biological predispositions to severe complications, including death, from COVID-19 (AMA, 2020, p. 4).

Despite the Affordable Care Act and availability of Medicaid, there were large numbers of undocumented Latinx who do did qualify for these programs; hence, almost one-third of the at-risk Latinx community was uninsured (AMA, 2020). Thus, "Latinx adults still experience the highest uninsured rate of any other racial/ethnic groups" in this country (p. 5). The aforementioned statistics exacerbated lack of access to critical healthcare, as a major reason why Latinx people constituted the "largest proportion of COVID-19 cases amongst minority and marginalized populations" (AMA, 2020, p.7).

There were also barriers of access to care for those in rural areas. According to Cheng et al. (2020), Blacks and Hispanics in rural counties experienced higher daily morbidity and mortality rates than any of their other community counterparts. Evidence showed that "Blacks and Hispanics have suffered a disproportionate burden of COVID-19 in the United States" (p. 602). Sadly, "little attention has been paid to intersections between rurality and race/ethnicity in COVID-19 outcomes" (Cheng et al., 2020, p. 602).

Others focused on issues unique to illegal immigrants. Macias et al. (2020) acknowledged the traditional cultural disenfranchisement of minorities and illegal immigrants in this country. They discussed how ethical dilemmas regarding high morbidity and mortality rates in Latinx epicenters arose because of the history of institutional oppression, and continuous oppression, at societal and institutional levels in this country. As a serious barrier, keeping Latinx communities adequately informed about reliable and valid health information, especially

during a pandemic, was most challenging—especially against the backdrop of a long history of disenfranchisement of minorities and illegal immigrants (Macias et al., 2020).

Summary of the Statement of the Problem

The problem of vulnerable Latinx communities needing to be adequately informed with reliable and valid health information during the COVID-19 pandemic justified the need for the present research study. It was possible that making available an online source of evidence-based, reliable information on COVID-19 would be of value to the Latinx population during the ongoing pandemic in the United States. The dissemination early in the year 2021 of "Our COVID-19 Knowledge Test" was viewed as potentially meeting the needs for this evidence-based and reliable information at a critical time in what was the ongoing pandemic in the United States: i.e., the period of data collection from April 7, 2021 to May 8, 2021 when online dissemination and data collection occurred via this study.

Summary of the Purpose of the Study

The purpose of the present study with a Latinx sample is two-fold, as follows: (1) to determine the extent to which taking the new "**Our COVID-19 Knowledge Test"** has the potential to serve as a brief online e-health intervention for increasing knowledge about COVID-19 and increasing self-efficacy for preventing COVID-19 transmission; this will be investigated **via paired t-tests** comparing self-ratings of COVID-19 knowledge and self-efficacy for before taking "**Our COVID-19 Knowledge Test"** versus after taking this True-False test; and (2) to **identify significant predictors** (i.e., via backward stepwise regression analyses controlling for social desirability) of the **two study outcome variables** of (a) a **higher COVID-19 knowledge test score on** "**Our COVID-19 Knowledge Test,"** and (b) a **higher**

self-efficacy for performing COVID-19 risk reduction behaviors—specifically for the after-taking "Our COVID-19 Knowledge Test" self-efficacy self-rating.

Summary of the Research Questions

Given a sample of Latinx adults (N=118) who lived in the United States and responded to the invitation to complete a survey (i.e., "*CLICK ON: https://tinyurl.com/LATINX-ADULTS-NEEDED (age 18 and above) TO TAKE 15 MINUTE SURVEY 'About You and COVID-19' for a chance to win 1 of 3 $100 Amazon gift cards. No immigration questions."*). The study will answer the following research questions:

Demographic Findings: Summary Research Question #1

1-Using descriptive statistics, what were the demographic characteristics of the sample of Latinx adults?

Key Experiences Findings: Summary Research Question #2

2-Using descriptive statistics, what were some of the key experiences of the sample of Latinx adults during the COVID-19 pandemic?

Key Knowledge, Self-Efficacy and the Brief Online E-Health Intervention Evaluation Findings for the New "Our COVID-19 Knowledge Test": Summary Research Question #3

3-Using descriptive statistics, what was the level of COVID-19 knowledge for the sample of Latinx adults; and, using paired t-tests, to what extent did taking the new "Our COVID-19 Knowledge Test" have the potential to serve as a brief online e-health intervention for increasing knowledge about COVID-19 and increasing self-efficacy for preventing COVID-19 transmission?

Key Relationships with Study Outcome Variables and Regression Findings: Summary Research Question #4

4-Using inferential statistics (i.e., Pearson correlation, t-tests), what significant relationships were found between selected independent variables and the study outcome

variables of (a) the level of COVID-19 knowledge on "Our COVID-19 Knowledge Test" (OCKT-44), and (b) the level of self-efficacy for preventing COVID-19 transmission—specifically for the after-taking "Our COVID-19 Knowledge Test" self-efficacy self-rating; and, using backward stepwise regression, what were the significant predictors of the study outcomes variables of (a) the level of COVID-19 knowledge on "Our COVID 19 Knowledge Test" (OCKT-44), and (b) the level of self-efficacy for preventing COVID-19 transmission—specifically for the after-taking "Our COVID-19 Knowledge Test" self-efficacy self-rating?

Summary of the Anticipated Findings

First, to determine the extent to which taking the new "**Our COVID-19 Knowledge Test"** had the potential to serve as a brief online e-health intervention for increasing knowledge about COVID-19 and increasing self-efficacy for preventing COVID-19 transmission, **the following paired t-test results were anticipated**:

- There should be a significant difference between the self-ratings of *knowledge about COVID-19* when comparing the **before** *versus* **after-test taking** the new "Our COVID-19 Knowledge Test" (OCKT-44)—upon analysis using a paired t-test.

- There should be a significant difference between the self-ratings of *self-efficacy for performing COVID-19 risk reduction behavior* when comparing the **before** *versus* **after-test taking** of the new "Our COVID-19 Knowledge Test"—upon analysis using a paired t-test.

For the **study outcome variable #1 of a higher COVID-19 knowledge test score on "Our COVID-19 Knowledge Test"** while controlling for social desirability, **the significant predictors are anticipated to be, as follows, given the independent variables shown:** Higher age (continuous); Female gender (male/female); Lighter skin color tone (continuous); Yes, for born in the U.S. (yes/no); Yes, for has partner (yes/no); No, for has children (yes/no); Higher level of education (continuous); Higher annual household income (continuous); Yes, for

currently employed (yes/no); Yes, for work-related COVID-19 risk (yes/no); Yes, for lost employment during COVID-19 (yes/no); Yes, for had stable work pre-COVID-19 (yes/no); Larger household size (continuous); Higher extent of COVID-19 transmission risk in home (continuous); Higher Body Mass Index (BMI) (continuous); Yes, for had COVID-19 (yes/no); Better physical health status during COVID-19 (continuous); Better mental health status during COVID-19 (continuous); Higher level of social support (continuous); Higher level of quality of life (continuous); Lower level of COVID-19 related stress (continuous); Lower level of cultural stress (continuous); Lower mental distress past year (depression, anxiety, trauma) (continuous); Yes, for sought mental health counseling in the past year (yes/no); and, No, for lost social support due to death/change in status (yes/no).

For the **study outcome variable #2 of a higher self-efficacy for performing COVID-19 risk reduction behaviors—specifically for the after-taking "Our COVID-19 Knowledge Test" self-efficacy self-rating,** while controlling for social desirability, **the significant predictors are anticipated to be:** Higher age (continuous); Female gender (male/female); Lighter skin color tone (continuous); Yes, for born in the U.S. (yes/no); Yes, for has partner (yes/no); Yes, for has children (yes/no); Higher level of education (continuous); Higher annual household income (continuous); Yes, for currently employed (yes/no); Yes, for work-related COVID-19 risk (yes/no); Yes, for lost employment during COVID-19 (yes/no); Yes, for had stable work pre-COVID-19 (yes/no); Lower household size (continuous); Lower extent of COVID-19 transmission risk in home (continuous); Lower Body Mass Index (BMI) (continuous); Yes, if had COVID-19 (yes/no); Better physical health status during COVID-19 (continuous); Better mental health status during COVID-19 (continuous); Greater level of social support (continuous); Higher level of quality of life (continuous); Lower level of COVID-19 related stress (continuous); Lower level of cultural stress (continuous); Greater mental distress

past year (depression, anxiety, trauma) (continuous); Yes, for sought mental health counseling in the past year (yes/no); and, No, for lost social support due to death/change in status (yes/no).

Summary of the Research Sample and Procedures

This research study employed a cross-sectional online survey using the Qualtrics platform, as approved by Teacher's College, Columbia University as the online tool for survey research. The research was conducted solely online. Approval was sought from the Institutional Review Board (IRB) of Teachers College, Columbia University prior to start of this study. Approval was received on March 28, 2021, under exempt category as protocol #21-246. Online data collection began on April 7, 2021 and ended May 8, 2021.

A social media campaign was used to recruit Latinx adults via email, Facebook, LinkedIn, Instagram, WhatsApp, text messages, and Twitter, using the core recruitment messages with the link to the online survey on Qualtrics, as follows:

> *CLICK ON: https://tinyurl.com/LATINX-ADULTS-NEEDED (age 18 and above) TO TAKE 15 MINUTE SURVEY "About You and COVID-19" for a chance to win 1 of 3 $100 Amazon gift cards. No immigration questions.*

As mentioned above, to encourage participation in the study, there was a study incentive. Specifically, participants had the opportunity to win one of three Amazon Gift Cards, each card valued at $100, with a 1 in 250 chance of winning. Once the survey was completed, any individual could elect to enter the gift card lottery by following a link where they could enter their email address. The principal investigator was not able view any email address entered, ensuring the privacy of all those who elected to enter their emails and participate in the lottery drawing for the prize of a $100 Amazon gift card.

In response to the social media campaign, the study successfully recruited a total of 230 potential participants. However, 25 records were from a duplicate IP address, raising the possibility of an individual having attempted to take the survey more than once to increase

chances of winning the study prize; hence, these 25 records were eliminated. Of those 205, only 136 were eligible to continue based on the six eligibility questions. This left 136 survey records. However, 1 of the 136 had all blank responses, leaving 135 remaining. Of those 135 remaining records, only 118 had proceeded sufficiently into the survey so as to have data for the two primary outcome variables of focus in the study. Hence, there was a final sample of convenience comprised of N=118 as the study completers.

Those included had met the study inclusion criteria by answering "yes" to the following 6 questions: 1- Are you an adult age 18 or above?; 2- Do you self-identify as Latinx, Hispanic or Latino?; 3- Have you been living continuously within the United States since March 2020—without any travel outside the country for more than 4 weeks?; 4- Are you able to read and understand English on the 12th grade level?; 5- Some people believe that COVID-19 is a "hoax" or is not real, so they would NOT be able to answer questions about COVID-19, as something that does not exist for them. Do you feel able to answer questions about "You and the COVID-19 Pandemic"?; and, 6- Are you able to devote about 15 minutes to this study at this time – for a chance to win one of three $100 Amazon gift cards?

Summary of the Research Instrumentation

The study survey instrument was the Survey for Latinx Adults "About You and the COVID-19 Pandemic." The survey parts were standard tools utilized by the Research Group on Disparities in Health (RGDH), Director, Professor Barbara Wallace, PhD, Teachers College, Columbia University. Survey parts were adapted for the present study by the Principal Investigator and the dissertation sponsor Dr. Barbara Wallace. The survey parts were, as follows:

- Part I: Basic Demographics (BD-9)
- Part II: Employment and Risks During the COVID-19 Pandemic (ECRDCP-9)
- Part III: Home Life During the COVID-19 Pandemic and Extent of Risk Reduction (HLDCP-ERR-3)

- Part IV: Personal Health Background—Current and Before Pandemic (PHB-CABP-8)
- Part V: Single Item Rating of Risk of Providing Socially Desirable Responses (SIR-RPSDR-1)
- Part VI: Perceived Social Support Scale (PSSS-3)
- Part VII: Rating Your Quality of Life Scale (RYQOL-S-1)
- Part VIII: Past-Year COVID-19 Related Stress – and Cultural Stress (PY-CRS-ACS-2)
- Part IX: Retrospective Depression, Anxiety, and Trauma Scale (R-DATS-4)
- Part X: Our COVID-19 Knowledge Test (OCKT-44)
- Part XI: Diffusion of the Innovation of Our COVID-19 Knowledge Test (DOI-OCKT-1)
- Part XII: COVID-19 Knowledge and Self-Efficacy for Risk Reduction Behaviors (C-K-SE-FRRB-4)
- Part XIII: Intention to Vaccinate for COVID-19 (IVC-1)

Summary of Data Management and Data Analysis

Data was collected via an online survey hosted by the Teacher's College, Columbia University approved Qualtrics platform. Survey data was then transferred to SPSS. The statistical analysis proceeded using the latest version of SPSS (26.0).

Summary of Results of Data Analysis

Findings served to answer the research questions, as detailed in this section.

Demographic Findings for Summary Research Question #1

Using descriptive statistics, what were the demographic characteristics of the sample of Latinx adults?

Demographic Findings

The Latinx sample of adults were mostly female (N =95), were 68.6% U.S. born (N=81), with a mean age of 41.42 (min=19, max=78, SD=15.620). Some 49.2% had partners (N=58), while 55.9% (N=66) had no children, with the mean number of children being closest to one child (M=.97, SD=1.362, min=0, max=5). Of note, the skin color tone mean was 3.29 (min=1, max=5, SD=1.255) for closest to light skin tone. The education level category mean was 5.05 (min=2, max=7, SD=1.232) for a bachelor's degree, and the annual household income category mean was 4.03 (min=1,max=9, SD=1.593) for between $50,000 and $99,999.

In reviewing all findings it should be kept in mind that the study survey sample presented a low moderate risk for providing socially desirable responses (M= 4.12, SD=3.002, min= 0, max=10).

Key Experiences Findings for Summary Research Question #2

> *Using descriptive statistics, what were some of the key experiences of the sample of Latinx adults during the COVID-19 pandemic?*

Findings for Experiences of COVID-19 Related Risks at Work and at Home

Some 69.5% (N=82) had worked continuously before the COVID-19 pandemic. For those adults currently working during the pandemic (N=78, 66.1%), 43.2% (N=67) did not. Regarding the specifics of their work-related risks for COVID-19 transmission, findings showed that: 49.2% (N=58) worked online sometimes or all the time; 35.6% (N=42) worked in person sometimes or all the time; 28% (N=33) had to interact with people in public/strangers; 31.4% (N=37) worked less than 6 feet from others at least some of the time; 28.8% (N=34) were essential workers; 11% (N=13) worked when they suspected or knew other co-workers had COVID-19; and, 2.5% (N=3) worked when they suspected or knew they had COVID-19.

Aside from work, for the in-home setting, the risk of COVID-19 transmission was low moderate (M= 1.64, SD=.754, min=1, max= 5). In support of this, the mean household size was moderate (M= 2.83, SD= 1.193, min=1, max=7) with 50.8% (N=60) living with a partner, and 19.5% (N=23) living alone. Most importantly, in support of low moderate risk of COVID-19 transmission at home, 63.6% (N=75) never had celebrations and social events in their home in the same way they did before the pandemic, and 43.2% (N=51) never had visitors in their home exactly as before the pandemic.

Findings for Experiences Involving Health Status Before and During COVID-19

Among the sample of Latinx adults, 18.6% (N=22) had COVID-19 in the past year, while 11% (N=13) were not sure. Of note, none thought COVID-19 was a "hoax" (N=118, 100%). For Body Mass Index (BMI) the mean was 27.68 for overweight (min=17.6, max=47.23, SD=6.09). Also, they self-rated as having had between good and very good physical health status pre-pandemic (M= 4.55, SD=.873, min=3, max=6), while during the pandemic physical health status was closest to good (M=4.13, SD=1.14, min=1, max=6), indicative of a decline; indeed, paired t-tests showed the difference for the pre-pandemic versus during pandemic self-ratings of physical health status was statistically significant (t= 5.168, df =117, p= .000). Similarly, mental health status was closest to good pre-pandemic (M= 4.35, SD=1.033, min=2, max=6), while during the pandemic it was between good and fair (M= 3.66, SD=1.262, min=1, max=6), also indicative of a decline; here, too, paired t-tests showed the difference that the pre-pandemic versus during pandemic self-ratings of mental health status was statistically significant (t=6.983 df=117, p=.000).

Findings for Experiences of Social Support, Quality of Life Indicators, Stress, and Mental Distress During the Pandemic

The sample experienced closest to high social support (i.e. having at least 3-5 people in their life right now (M= 3.88, SD=1.006, min=1, max=5), and 82.2% (N=97) had not lost social support in the past year due to deaths from COVID-19. Yet, there were 5.9% (N=7) who had lost one person and 6.8% (N=8) had lost two people to death from COVID-19. Similarly, 70.3% (N=83) had not lost social support due to people having a change in their circumstances during the pandemic. Meanwhile, 13.6% (N=16) had lost social support from 1 person due to a change in their circumstances, 7.6% (N=9) had lost social support from 2 persons, and 5.9% (N=7) had lost social support from 3 persons for that reason.

Further, the sample experienced closest to a good quality of life (M=4.20, SD=1.23, min=1, max=6). Collectively, some 68.6% (N=81) rated their quality of life as good, very good, or excellent.

Regarding experiences of stress, first for COVID-19-related stress in the past year, this was rated moderately high (M=6.43, SD=2.44, min=0, max=10)—with 70.3% (N=83) having experienced moderately high to maximum/extreme stress (scores 6 to 10) in the past year. Secondly, for cultural stress in the past year, this was rated moderately low (M=4.10, SD=3.193, min=0, max=10)—with 46.5% (N=55) having experienced moderate to maximum/extreme cultural stress (scores 5 to 10) in the past year.

In the past year, the sample had experienced moderate mental distress (M=1.79, SD=1.061, min=0, max=3). More specifically, 66.9% (N=79) reported depression, 78.8% (N=93) reported anxiety, 33.1% (N=39) reported trauma, and 44.1% (N=52) had sought counseling in the past year.

Key Knowledge, Self-Efficacy and the Brief Online E-Health Intervention Evaluation Findings for the New "Our COVID-19 Knowledge Test" for Summary Research Question #3

> *Using descriptive statistics, what was the level of COVID-19 knowledge for the sample of Latinx adults; and, using paired t-tests, to what extent did taking the new "Our COVID-19 Knowledge Test" have the potential to serve as a brief online e-health intervention for increasing knowledge about COVID-19 and increasing self-efficacy for preventing COVID-19 transmission?*

Findings for the New "Our COVID-19 Knowledge Test"

The Latinx adults in this research survey sample had a high level of COVID-19 knowledge (M= 40.49, SD=4.23, min=13, max=44), with the highest levels of knowledge (i.e. 100%, N=118 endorsed True), for items covering how a person infected with COVID-19 may transmit it to others, possible symptoms of COVID-19, knowledge of incubation period for the disease, and how a person may be asymptomatic while transmitting the disease to others. On the

other hand, the lowest areas of knowledge were for how those with a mental illness are at a much higher risk of getting COVID-19 (i.e. only 48.3%, or N=57 endorsed True), and how men are much more likely that women to die from COVID-19 —(i.e. only 66.9%, or N=79 endorsed True). Also, consistent with a high level of COVID-19 knowledge, 87.0% (N=100) indicated "yes" for intending to receive COVID-19 vaccination or already having received the vaccine.

After completing the "Our COVID-19 Knowledge Test," 80.2% (N=93) indicated "yes" they would recommend "Our COVID-19 Knowledge Test" to others—diffusing the innovation of learning about COVID-19 via this new e-health online intervention.

The exercise of taking the "Our COVID-19 Knowledge Test" emerged as an effective brief e-health intervention, given how participants self-rated in quick succession their *COVID-19 knowledge* and *self-efficacy for COVID-19 risk reduction behaviors* for before *versus* after taking the True-False online test. First, paired t-tests for self-ratings of their *COVID-19 knowledge* for before (M=4.71, SD=.845) versus after (M=5.09, SD=.938) taking the "Our COVID-19 Knowledge Test" showed knowledge was significantly higher (t= -4.900, df=115, p=.000) after taking the True-False test. Secondly, paired t-tests for self-ratings of their *self-efficacy for COVID-19 risk reduction behaviors* for before (M=5.16, SD=.844) versus after (M=5.39, SD=.835) taking the "Our COVID-19 Knowledge Test" showed that self-efficacy was significantly higher (t= -4.023, df=114, p=.000) for after taking the True-False test.

Key Relationships with Study Outcome Variables and Regression Findings for Summary Research Question #4

> *Using inferential statistics (i.e., Pearson correlation, t-tests), what significant relationships were found between selected independent variables and the study outcome variables of (a) the level of COVID-19 knowledge on "Our COVID-19 Knowledge Test" (OCKT-44), and (b) the level of self-efficacy for preventing COVID-19 transmission—specifically for the after-taking "Our COVID-19 Knowledge Test" self-efficacy self-rating; and, using backward stepwise regression, what were the significant predictors of the study outcomes variables of (a) the level of COVID-19 knowledge on "Our COVID-19 Knowledge Test" (OCKT-44), and (b) the level of self-efficacy for preventing COVID-*

19 transmission—specifically for the after-taking "Our COVID-19 Knowledge Test" self-efficacy self-rating?

Findings on Relationships with Study Outcome Variables

Regarding significant relationships with the study outcome variables, it was found that **those who had not lost social support in the past year ("no") had a higher mean self-efficacy level for performing COVID-19 risk reduction behaviors** (M=5.58, SD=.618, N=74) in comparison to the mean self-efficacy level of those who had lost social support ("yes") in the past year (M=5.05, SD=1.048, N=41)—achieving significance (t= 2.978; df=55.85, p=.004; Bonferroni Adjustment Significance, .05/11= .0045, p=.0045).

Also, it was found via Pearson correlations (Bonferroni Adjustment Significance, .05/14, p= .004) for the first study outcome variable that **the higher the COVID-19 knowledge test score** on the "Our COVID-19 Knowledge Test" (OCKT-44), then the **lower** the risk of COVID-19 transmission in the home (r= -272, p= .003). In addition, other findings showed via Pearson correlations (Bonferroni Adjustment Significance, .05/14, p= .004) that for the second study outcome variable that the **higher the self-efficacy for performing COVID-19 risk reduction behaviors,** then the **lighter** the skin color (r= -.245, p = .008), the **better** the physical health status during the COVID-19 pandemic (r= .369, p= .000), the **better** the mental health status during the COVID-19 pandemic (r= .320, p= .000), and the **lower** the risk of COVID-19 transmission in the home (r= -272, p= .003).

Findings for the Regression Analyses

First, using backward stepwise regression, while controlling for social desirability, the significant predictors of a **higher COVID-19 knowledge test score on** "**Our COVID-19 Knowledge Test" (OCKT-44)** were found to be: "no" for if has stable work pre-COVID-19 (b = -2.182, SEB=.929, p = .021); "yes" for currently employed (b= 2.289, SEB=.883, p=.011);

"low" "extent of COVID-19 transmission risk in home (b=-2.290, SEB=.515, p=000); "no" for if had COVID-19 (b= -1.908, SEB=.916, p=.040)—with 22.1% of the variance explained by this model (R^2= 0.254, Adjusted R^2= 0.221; F=7.573, p=000).

Second, using backward stepwise regression, while controlling for social desirability, the significant predictors of a **higher self-efficacy level for performing COVID-19 risk reduction behaviors** were found to be: "no" for if has partner (b = -.353, SEB=.126, p = .006); "yes" for if received counseling past year (b= .385, SEB=.131, p=.004); "low" risk of COVID-19 transmission in home (b = -.348, SEB=.093, p= .000); lighter skin color tone (b= -.147 SEB=.052, p=.006); and, better physical health status during COVID-19 (b= .284, SEB=.057, p= .000)—with 36.3% of the variance was explained by this model (R^2= 0.397, Adjusted R^2 = 0.363; F= 11.720, p=.000).

Discussion of Results

This section will provide a discussion of the results. The discussion is organized with a reference to each of the four summary research questions, permitting a focus on the relevant bodies of findings.

Discussion of Demographic Findings for Summary Research Question #1

The research mirrored another study (i.e., Williams-Gunpot, 2021) conducted during the pandemic that served as the debut of the "Our COVID-19 Knowledge Test" with a larger 100% Black (N=188) sample, whereas the present study used a 100% Latinx (N=118) sample. Hence, this discussion provides an opportunity to discuss the findings in this study within the context of making numerous comparisons to the investigation by Williams-Gunpot. This also follows from the use of several measures that were the same in the present study and in the Williams-Gunpot study.

For example, both studies had largely female samples, with the present Latinx sample being 80.5% female (N=95) and Williams-Gunpot (2021) having 83.5% female (N=157)—with the samples being similar in age: i.e. mean age of 41.42 (min=19, max=78, SD=15.62) in this study, and a mean age of 43.16 (min=18, max=72, SD=12.57) in the Williams-Gunpot study. Also similar across studies was the low number of children, as this study found the mean number of children was closest to one child (M= .97, SD=1.362, min=0, max=5); and, Williams-Gunpot found the mean number of children was also closest to one child (M=1.32, SD=1.467, min=1, max=7).

Not surprisingly, the present study sample had closest to light skin tone (M=3.29, SD=1.26, min=1, max=5). Williams-Gunpot (2021) found her Black sample had closest to medium to dark skin tone (M=4.82, SD=.973, min=2, max=7).

With regard to education, both samples were well educated, having closest to a bachelor's degree [i.e., present study M=5.05, SD=1.232, min=2, max=7; and, Williams-Gunpot (2021) M=5.2, min=1, max=7]. And, for annual household income both samples reported between $50,000 and $99,000 [i.e., present study M=4.03, SD=1.59, min=1,max=9; and, Williams-Gunpot M=3.94, SD=1.31, min=1, max=9].

The two samples were also similar in having closest to a low moderate risk for providing socially desirable responses [i.e., present study M= 4.12, SD=3.002, min= 0, max= 10; and, Williams-Gunpot (2021) M=3.75, SD=3.009, min= 0, max= 10]. This may be kept in mind in considering responses on the survey findings that follow.

Discussion of Key Experiences Findings for Summary Research Question #2

Discussion of Findings for Extent of COVID-19 Related Risks at Work and at Home

A common measure used in the prior study of Williams-Gunpot (2021), and in the present study, covered transmission risks in the work and home environment. The present Latinx

sample had somewhat lower rates of employment during the pandemic than did the Black sample of Williams-Gunpot: i.e., the present study had 66.1%, N=78 employed; and, Williams-Gunpot had 81.4%, N=153 employed. This pattern of higher Black continuous employment relative to the Latinx sample was present pre-pandemic: i.e., the present study had 69.5% (N=82) continuously employed pre-pandemic; and, Williams-Gunpot had 85.1% (N=160) continuously employed pre-pandemic. This pattern of lower Latinx employment is consistent with the work of Chang et al. (2021), who discussed the high unemployment rates among Hispanic populations. This higher unemployment rate might reflect the Latinx having a higher rate of classification as undocumented immigrants (e.g., Cantos & Rebolledo, 2020).

Regarding COVID-19 risks of transmission with regard to their work settings, the Latinx sample in this study had 49.2% (N=58) who worked from home online sometimes or all of the time during the pandemic, while the Black sample of Williams-Gunpot (2021) worked online from home at the higher 66% (N= 124). The Black sample had 52.1% (N=98) who were employed as essential workers with 48.9% (N=92) having to interact with the public/strangers, and 43.1% (N=81) were unable to maintain 6-foot social distancing while at work. On the other hand, the Latinx sample had a much lower 28.8% (N=34) who were employed as essential workers with 28% (N=33) having to interact with people in public/strangers at work, and 31.4% (N=37) unable to maintain 6-foot social distancing at work. The present study concluded that, overall, 56.8% (N=67) of Latinx were not facing any COVID-19 transmission risk at work, while Williams-Gunpot (2021) concluded that the Black sample faced a low-moderate level of work-related risks for COVID-19 transmission (M=2.56, SD=2.102, min=0, max=7). The body of findings with the Latinx and Black samples discussed, above, is consistent with the work of Williams et al. (2020), who reported that Blacks and Hispanics were more likely to be employed

as essential workers—while the Black sample had a higher representation in the category of being an essential worker. This supports the Gould et al. (2020) discussion that Hispanic communities' essential workers tend not to have the luxury of working from home. This was potentially partly reflected in the present study having just 49.2% (N=58) of participants who were able to work online sometimes or all the time during the pandemic, in contrast to Williams-Gunpot (2021) having a higher 66% (N= 124) who were able to work online from home.

Regarding risks of COVID-19 transmission in the home setting, again, comparisons to Williams-Gunpot (2021) are possible. Household size was moderate for both the Latinx (M= 2.83, SD=1.193, min=1, max=7) and Black (mean=2.64, min=1, max=6, SD=1.363) samples. The samples were comparable with 50.8% (N=60) living with a partner and 19.5% (N=23) living alone in the Latinx sample; and, with 46% (N=86) living with a partner and a somewhat higher 27.1% (N=51) living alone in the Black sample. Thus, despite the warnings of Gardner (2021, p. 312) that COVID-19 had "laid bare" issues such as "overcrowded housing," neither the Latinx or Black samples of convenience drawn to participate in the two online surveys approximately one year into the U.S. pandemic were living in such conditions. Of note, Gil et al. (2020) linked housing density to high rates of COVID-19 morbidity and mortality; meanwhile. the rates of having had COVID-19 in the past year were low—and nearly identical—for both the Latinx and Black samples: i.e. in the present study18.6% (N=22) of the Latinx adults had COVID-19 in the past year, while 11% (N=13) were not sure; and, in the Williams-Gunpot (2021) study, similarly, 19.1% (N=36) of Black adults had COVID-19 in the past year, while 11.7% (N=22) were not sure. Thus, it is possible that potentially having conducted the present study with different samples that were *not* composed of volunteers, and where there were higher rates of COVID-19 infection (e.g., a random telephone sample), higher household sizes or more

dense housing might have been found; yet, such was not the case in the present study, nor in the highly comparable Williams-Gunpot study.

Most importantly, both the Latinx and Black samples were engaging in risk reduction measures in the home setting such that there was a low moderate risk of COVID-19 transmission in the home. Specifically, in the Latinx sample a mean of 1.64 (SD=.754, min=1, max= 5) indicated this low moderate risk, while in the Black sample a nearly identical mean of 1.67 (SD=.699, min=1, max= 4) also indicated a low moderate risk. For example, in the Latinx sample, 63.6% (N=75) never had celebrations and social events in their home in the same way they did before the pandemic; and, in the Black sample a nearly identical 64.4% (N=121) never had celebrations and social events in their home in the same way they did before the COVID-19 pandemic.

Discussion of Findings for Health Status Before and During COVID-19

Beyond the Latinx sample in this study and the Black sample of Williams-Gunpot (2021) having nearly identical rates of COVID-19 infection in the past year (i.e. 18.6% and 19.1%, respectively), there were other similarities in health status across the two studies. Both the Latinx sample and the Black sample experienced a decline in their physical health status and in their mental health status when comparing ratings pre-pandemic to during the pandemic via paired t-tests.

Specifically, for *physical health status pre-pandemic*, the Latinx had a mean rating between good and very good (M = 4.55, SD=.873); and, the Black sample had the same rating of between good and very good (M=4.34, SD=0.964). For *during the pandemic physical health status*, the Latinx had a decline to a mean rating closest to good (M=4.13, SD=1.14); and, the Black sample had the same decline to a rating of closest to good (M=3.96, SD=1.069). Paired t-tests showed there was a significant difference when comparing the ratings for *physical health*

status pre-pandemic versus for *during the pandemic physical health status* (i.e. Latinx: t= 5.168, df =117, p= .000; Black: t= 6.627, df =185, p= .000), indicating a decline during the pandemic.

Similarly, for *mental health status pre-pandemic*, the Latinx and Black samples experienced a decline *from pre-pandemic* to *during the pandemic*. The Latinx sample had a *pre-pandemic mental health status* closest to good (M= 4.35, SD= 1.033); and, the Black sample had the same rating of closest to good (M=4.37, SD=0.895). For *during the pandemic mental health status,* the Latinx sample had declined to between good and fair (M= 3.66, SD =1.262); and, the Black sample had the same decline to between good and fair (M=3.51, SD=1.199)—as a significant difference (i.e. Latinx: t= 6.983, df=117, p=.000; Black: t= 11.13450, df=187, p=.000).

With regard to these findings of a common decline in both physical and mental health status during the pandemic for the Latinx and Black samples, the observations of Fortuna et al. (2020) may be relevant. Fortuna et al. (2020) noted that the "sociopolitical, racial, and environmental stresses that communities of color" had already experienced were "unimaginably magnified during the COVID-19 pandemic" (p. 1). Also, Luo et al. (2020) observed how "in addition to the physical health" impacts, there were negative "potential psychological and mental health" impacts from the COVID-19 pandemic—which "should also be taken seriously" (p. 1). This study's findings of a decline in physical and mental health status for the Latinx sample, which mirror the decline for the Williams-Gunpot (2021) Black sample, underscore the importance of focusing on mitigating potential physical and mental health problems, and finding solutions for future public health crisis, epidemics, and pandemics going forward.

Discussion of Findings for Social Support, Quality of life Indicators, Stress, and Mental Distress

Meanwhile, research is showing that social support may be "beneficial to health and well-being" (Cohen et al., 2000, p. 4). This follows from how social support may provide a stress buffer, contributing to the appraisal of "potentially threatening situations as less stressful" (Lakey & Cohen, 2000, p. 30). Regarding such social support, both the Latinx sample and the Black sample in Williams-Gunpot (2021) experienced similar levels of high social support. For the Latinx sample, 39.8% (N=47) had 3-5 people providing social support at the time of the ongoing U.S. pandemic early in 2021, and 30.5% (N=36) had 6 or more people providing social support. Similarly, for the Black sample, 34.6% (N=65) had 3-5 people providing social support, and 29.8% (N=56) had 6 or more people providing social support. Consistent with those findings of high social support, both samples enjoyed closest to a good quality of life (i.e., Latinx M=4.20, SD=1.23, min=1, max=6; Black M=4.05, SD=1.073, min=1, max=6).

For COVID-19 related stress in the past year, the Latinx sample reported a higher level of stress than did the Black sample in Williams-Gunpot (2021). Specifically, for the Latinx sample, their past year *COVID-19 related stress was moderately high* with a mean score of 6.43 (SD=2.44, min=0, max=10), while for the Black sample their past year *COVID-19 related stress was moderately low* with a mean score of 4.04 (SD=2.12, min=0, max=10). The higher rating of COVID-19 related stress for the Latinx sample might be related to factors such as lower levels of employment (i.e. 66.1% employed during pandemic in comparison to the Black sample with 81.4% employed during the pandemic), which might be related to an undocumented immigrant status (e.g., Cantos & Rebolledo, 2020; Quandt, et al., 2020). To address this issue, the study invitation disseminated via a social media campaign online using various platforms (e.g.,

Facebook) indicated there would be no questions about anything related to immigration to avoid participants not wanting to get involved in the research.

On the other hand, the higher rating of COVID-19 related stress for the Latinx sample might be related to experiences of cultural stress, as an association explored in this study. This cultural stress could include "immigration-related stress," stress from "language brokering," or "bicultural stress," or "worries surrounding documentation issues and fears of deportation"—as a form of stress that had become more prominent during an era of a rise in deportations and hate crimes toward Latinos in the U.S. For cultural stress in the past year, this was rated moderately low with a mean of 4.10 (SD= 3.193, min=0, max=10). Yet, of note, 46.5% (N=55) of the Latinx in the present study had experienced moderate to maximum/extreme cultural stress (scores 5 to 10) during the past pandemic year.

Luo et al. (2020) discussed how**,** globally, during the COVID-19 pandemic, people were suffering "heavy psychological burdens," including among the general public, evidence of "anxiety, depression, panic attacks, or psychotic symptoms"—as well as psychological distress (p. 1). Hence, in that regard, this study's findings are noteworthy. For this study's Latinx sample their past year mental distress was a mean of 1.79 (min=0, max=3, SD=1.061) for closest to a moderate level of mental distress; and, similarly, for the Williams-Gunpot (2021) Black sample, their past year mental distress was a mean of 1.94 (min=0, max=3, SD=1.066) for a closest to a moderate level of mental distress. This mental distress was a composite score for specific ratings of depression, anxiety, and trauma.

Luo et al. (2020) found that the "most common indicators of psychological impact" from the COVID-19 pandemic "reported across studies were anxiety and depression" (p. 6). Across the studies reviewed by Luo et al. (2020), the prevalence rates for anxiety ranged from 28% to

38%, and the prevalence rates for depression ranged from 23% to 32% (p. 6). Suggestive of a much greater negative impact from the COVID-19 pandemic upon racial-ethnic minorities were the following findings: specifically, for the Latinx sample in the present study, 66.9% (N=79) reported depression in the past year, 78.8% (N=93) reported anxiety, 33.1% (N=39) reported trauma, and 44.1% (N=52) had sought counseling in the past year – in support of a much greater negative impact from the COVID-19 pandemic upon racial-ethnic Latinx minorities. Similarly reported for the Williams-Gunpot (2021) Black sample, was 70.7% (N=133) for depression in the past year, 78.2% (N=147) reported anxiety, 45.2% (N=85) reported trauma, and 43% (N=81) had sought counseling in the past year.

Thus, the Latinx and Black samples were remarkably similar with regard to their experiences of symptoms of mental disorders during the COVID-19 pandemic, while apparently much higher than what Luo et al. (2020) found for samples of subjects around the world. As shown above, the percentage of Latinx and Black study participants reporting depression and anxiety were double that reported for samples around the world by Luo et al. (2020). This lends credence to those who have argued that the COVID-19 "virus itself may not discriminate, but long-standing inequality and structural racism in the United States have created the conditions that have allowed COVID to disproportionately ravage communities of color" (Cannon, 2020, p. 204). The American Medical Association (AMA, 2020) similarly focused on how at risk Latinx communities were more vulnerable to COVID-19 due to many factors such as "historical disenfranchisement and racism" (p. 6). Whether due to social determinants that serve to disadvantage minorities (e.g., Braveman & Gruskin, 2003), structural racism and inequities (e.g., Gee & Ford, 2011), or discrimination (e.g., Page & Flores-Miller, 2021), the Latinx and Black

samples referred to, herein, suffered with strikingly high levels of anxiety and depression during the COVID-19 pandemic.

Discussion of Key Knowledge, Self-Efficacy and the Brief Online E-Health Intervention Evaluation Findings for the New "Our COVID-19 Knowledge Test" for Summary Research Question #3

Discussion of Findings for the New "Our COVID-19 Knowledge Test"

Researchers have discussed during the COVID-19 pandemic the potential role of numerous factors, such as: the potential role of disinformation spread by the media and public officials during the pandemic (Jaiswal et al., 2020); the possible impact of inconsistent and unscientific messaging (Tanne et al., 2020); and how false and misleading "misinformation about the COVID-19 pandemic" was posing a "serious threat" to public health as an "infodemic" (Roozenbeek et al., 2020, p. 1). Yet, in contrast to that literature, the present study found that the Latinx sample had very high knowledge regarding COVID-19, as measured by the new "Our COVID-19 Knowledge Test" (M= 40.49, SD=4.23, min=13, max=44). The Latinx adults had the highest levels of knowledge (i.e. 100%, N=118 endorsed True) for items covering: how a person infected with COVID-19 may transmit it to others; possible symptoms of COVID-19; the incubation period for the disease; and how a person may be asymptomatic while transmitting the disease to others. The Williams-Gunpot (2021) Black study sample had a nearly identical high levels of COVID-19 knowledge (M=40.34, SD=3.092, min=23, max=44): and, as in the present study—with the highest level of knowledge (i.e. 100%, N=188 endorsed True) for the item covering possible symptoms of COVID-19; and, another 98.9% (N=186) endorsed True for how a person infected with COVID-19 may transmit it to others.

The present study's sample of Latinx adults who had very high knowledge of COVID-19 were quite different from the sample of undocumented immigrant farm workers who were essential workers, as described by Quandt et al. (2020). Those essential farmworkers urgently

needed access to “knowledge and preventive behaviors” that were important “to reduce COVID-19 spread in the community” (p. 1). Potentially operating for other Latinx samples with lower knowledge and preventive behaviors might be “intersections between rurality and race/ethnicity in COVID-19 outcomes” (Cheng et al., 2020, p. 602).

Just as there are barriers to access to care in rural areas, the common problem of a lack of widespread internet access in rural areas may also translate into barriers to access to information in rural areas. Meanwhile, the present study’s Latinx sample with a mean level of education of a bachelor’s degree had high COVID-19 knowledge. While this study did not collect geographic data regarding zip codes, the Principal Investigator’s affiliated university was located in the New York City metropolitan area; and, the use of snowballing that started from urban contacts and via social media likely spread through urban social contacts suggests the sample did not include many rural Latinx participants.

Having high COVID-19 knowledge might be related to intention to vaccinate for COVID-19. During the pandemic, it had been observed how American communities of color were notably distrustful of new vaccines for COVID-19, which were needed to mitigate the virus and spread of COVID-19 (Tanne et al., 2020). However, in this study, 87.0% (N=100) of the Latinx sample indicated “yes” for either intending to receive or already having received the vaccine. On the other hand, the Williams-Gunpot (2021) Black sample had a somewhat lower numbers of 58.7% (N=127) who indicated “yes” for either intending to receive or already having received the vaccine. The lower intention to/actual vaccination rate for the Black sample—relative to the Latinx sample—may reflect a Black distrust that is rooted in more than the assumed historical impact of Tuskegee; for example, much more relevant and impactful may be Black people’s direct exposure to contemporary everyday racism (Bajaj & Stanford, 2021). Greater exposure to everyday racism likely occurs for a Black sample with a mean skin color

tone closest to medium to dark (M=4.82, SD=.973, min=2, max=7) in comparison to the Latinx sample with a mean skin color tone closest to light (M=3.29, SD=1.26, min=1, max=5). Thus, contemporary everyday racism might be a greater factor in the Black sample's lower COVID-19 vaccination/intention to vaccinate rate in comparison to this study's higher Latinx rate. Meanwhile, the Latinx sample's high rate (87%) for intending to/having already vaccinated is consistent with their high level of COVID-19 knowledge, while other factors may be operating for the Black sample (e.g., everyday racism, darker skin tone).

Regarding the perceived value in the innovation of "Our COVID-19 Knowledge Test" as a brief e-health intervention in the form of a True-False test with all True answers, the Latinx sample in the present study provided a strong endorsement. After being informed that all answers were True, 80.2% (N=93) of the Latinx adults indicated "yes" for recommending the "Our COVID-19 Knowledge Test" to others, as a way to learn about COVID-19; this was indicative of diffusing the innovation of learning about COVID-19 via this new e-health online tool. This study's finding closely aligned with that of Williams-Gunpot (2021) where 83.8% (N=155) of the Black adults in that sample would recommend the "Our COVID-19 Knowledge Test" to others, thereby diffusing the innovation.

Braveman and Gottlieb (2014) had previously asserted how it has been considered critical for communities to have access to valid sources of health information in order to be self-efficacious and take control of over their health. Thus, there was value in determining if taking the brief e-health intervention of the new "Our COVID-19 Knowledge Test" had an impact on not only self-rated *COVID-19 knowledge*, but also on self-rated *self-efficacy for COVID-19 risk reduction behaviors*. In this regard, evidence was found in this study that the exercise of taking the "Our COVID-19 Knowledge Test" served as an effective brief e-health intervention, given

how participants self-rated in quick succession their *COVID-19 knowledge* and *self-efficacy for COVID-19 risk reduction behaviors* for before *versus* after taking the True-False test.

First, with this study's Latinx sample, paired t-tests compared their *COVID-19 knowledge* for before (M=4.71, SD=.845) *versus* after (M=5.09, SD=.938) taking the "Our COVID-19 Knowledge Test," showing a significantly difference (t= -4.900, df=115, p=.000). Once again, this finding closely aligned with that of Williams-Gunpot (2021) with a Black sample: i.e., paired t-tests found the self-rated level of *COVID-19 knowledge* for before (M=4.57, SD=.884) versus after (M=4.85, SD=.842) taking the "Our COVID-19 Knowledge Test" was significantly different (*t*= -4.967, df = 183, p= .000). Hence, both the Latinx and Black adult samples self-rated *COVID-19 knowledge* as significantly higher after taking the "Our COVID-19 Knowledge Test," suggesting this new brief e-health was effective in increasing COVID-19 knowledge.

Secondly, this study's Latinx sample showed, via paired t-tests, a significant increase in self-rated *self-efficacy for COVID-19 risk reduction behaviors* after taking the "Our COVID-19 Knowledge Test," suggesting this new brief e-health was also effective in increasing self-efficacy: i.e. *self-efficacy for COVID-19 risk reduction behaviors* for before (M=5.16, SD=.844) *versus* after (M=5.39, SD=.835) taking the "Our COVID-19 Knowledge Test" showed knowledge was significantly higher (t= -4.023, df=114, p=.000) after taking the True-False test. Here, too, the findings in this study closely aligned with those of Williams-Gunpot (2021) with a Black sample: i.e. paired t-tests found the self-rated *self-efficacy for COVID-19 risk reduction behaviors* for before (M=5.17, SD=.791) versus after (M=5.33, SD=.755) taking the "Our COVID-19 Knowledge Test" showed self-efficacy was significantly higher (t= -5.250, df=183, p=.000) after taking the True-False test. Again, both the Latinx and Black adult samples' ratings of self-efficacy for *COVID-19 risk reduction behaviors* for before versus after taking the "Our

COVID-19 Knowledge Test" further reinforced how the new brief e-health intervention of this True-False test with all True answers was effective in increasing self-efficacy. Of note, in the present study the findings for the paired-tests had been anticipated in support of the positive impact on knowledge and self-efficacy from taking the "Our COVD-19 Knowledge Test."

In sum, the new "Our COVID-19 Knowledge Test" appeared to meet the standard suggested by the work of Braveman et al. (2014) where it is considered vital for communities to have access to valid sources of health information in order to be self-efficacious and take control of over their health. The new "Our COVID-19 Knowledge Test" accumulated evidence one year into the pandemic for effectively providing valid health information on COVID-19, while also positively impacting self-efficacy for performing COVID-19 risk reduction behaviors.

Discussion of Key Relationships with Study Outcome Variables and Regression Findings for Summary Research Question #4

Discussion of Findings on Relationships with Study Outcome Variables

Other evidence showed significant relationships among selected independent variables with the study's two outcome variables: i.e., the *COVID-19 knowledge test score* on the "Our COVID-19 Knowledge Test"; and the *self-efficacy for COVID-19 risk reduction behaviors for after taking the taking the True-False test*. For example, significant relationships using independent t-tests found with the Latinx sample that those who had *not* lost social support in the past year ("no") had a higher mean self-efficacy level for performing COVID-19 risk reduction behaviors (M=5.58, SD=.618, N=74) in comparison to the mean self-efficacy level of those who had lost social support ("yes") in the past year (M=5.05, SD=1.048, N=41)—achieving significance (t= 2.978; df=55.85, p=.004). This finding of a significant difference reinforced the importance of having social support during a pandemic, as social support was associated with a higher self-efficacy for performing COVID-19 risk reduction behaviors. This finding was

aligned with the view of Cohen et al. (2020) that social support may be beneficial for health and well-being. Also, the construct of "social support" has been viewed as "effective in promoting coping and reducing the effects of a stressor" (Lakey & Cohen, 2000, p. 31); this may have been the case when experiencing a once in a century pandemic that demanded coping in the form of performing COVID-19 risk reduction mitigation behaviors. It may be noted that Williams-Gunpot (2021) found no significant group differences via independent t-tests while analytic exploration focused on the same two outcome variables (i.e., the *COVID-19 knowledge test score* on the "Our COVID-19 Knowledge Test"; and the *self-efficacy for COVID-19 risk reduction behaviors for after taking the True-False test*).

Williams-Gunpot (2021) also found no significant relationships via Pearson correlations between selected independent variables and the study outcome variable of a higher COVID-19 knowledge test score on the "Our COVID-19 Knowledge Test." In contrast, in the present study, using Pearson correlation, it was found that **the higher the COVID-19 knowledge test score** on the "Our COVID-19 Knowledge Test," then the **lower** the risk of COVID-19 transmission in the home (r= -272, p= .003). This suggested how engagement in COVID-19 risk reduction behaviors in the home (e.g., not having celebrations or parties, and not having people in one's home in the same manner as before the pandemic) appeared to be associated with a higher level of COVID-19 knowledge. Apparently, the Latinx sample had access to "knowledge" deemed important "to reduce COVID-19 spread in the community," unlike a previous sample of essential rural farmworkers who were lacking in this regard (Quandt et al., 2020, p.1).

Further, as an additional parallel finding, the **higher the self-efficacy for performing COVID-19 risk reduction behaviors,** then the **lower** the risk of COVID-19 transmission in the home (r= -272, p= .003). With having a higher self-efficacy or confidence to perform preventive

behaviors being within the realm of also having an awareness of preventive behaviors, consider, here, too, the work of Quandt et al. (2020): i.e., awareness of "preventive behaviors" was also important "to reduce COVID-19 spread in the community" (Quandt et al., 2020, p. 1).

Also noteworthy among the many significant Pearson correlations in the present study, the **higher the self-efficacy for performing COVID-19 risk reduction behaviors,** then the **better** the physical health status during the COVID-19 pandemic (r= .369, p= .000) and the **better** the mental health status during the COVID-19 pandemic (r= .320, p= .000). It makes sense that those with a better mental health status, such as with having a likely lower prevalence of anxiety and depression, would logically have less of a psychological impact from the pandemic; and, a higher self-efficacy for performing COVID-19 risk reduction behaviors would be a potential manifestation of there being less of a psychological impact from the pandemic. For example, consider how anxiety and depression were found across prior studies to be the most common indicators of a psychological impact from the pandemic (Luo et al., 2020). Unlike in the present study and in comparison, Williams-Gunpot (2021) found no significant correlations with a higher self-efficacy for performing COVID-19 risk reduction behaviors.

Discussion of Findings for the Regression Analyses

Also, with the Latinx sample, using backward stepwise regression, while controlling for social desirability, the significant predictors of a **higher COVID-19 knowledge test score on** "**Our COVID-19 Knowledge Test"** were found to be: "no" for if has stable work pre-COVID-19 (i.e., not an anticipated finding); "yes" for currently employed (i.e. an anticipated finding); "low" extent of COVID-19 transmission risk in home (i.e. an anticipated finding); "no" for if had COVID-19 (i.e. not an anticipated finding)—with 22.1% of the variance explained by this model (R^2= 0.254, Adjusted R^2= 0.221; F=7.573, p=000). It makes sense that a higher COVID-19 knowledge test score on the True-False test would be significantly predicted by a

lower risk of COVID-19 transmission in their homes. Also, as for current employment being a significant predictor of a higher COVID-19 knowledge test score, it is possible that those who were currently employed were receiving more and/or seeking out more public health information about COVID-19 transmission. Consider how the media also placed tremendous focus on those employed during the pandemic needing personal protective equipment, or PPE (e.g., Garcia et al., 2021). This potentially served to contribute to higher knowledge about COVID-19 transmission for anyone employed during the pandemic, or for anyone who may have paid great attention to such widely publicized information about the risks for the employed.

Second, with the Latinx sample, using backward stepwise regression, while controlling for social desirability, the significant predictors of a **higher self-efficacy level for performing COVID-19 risk reduction behaviors—specifically for the after-taking "Our COVID-19 Knowledge Test" self-efficacy self-rating** were found to be: "no" for if has partner (i.e., not an anticipated finding); "yes" for if received counseling past year (b= .385, SEB=.131, p=.004) (i.e., an anticipated finding); "low" risk of COVID-19 transmission in home (i.e., an anticipated finding); lighter skin color tone (i.e. an anticipated finding); and, better physical health status during COVID-19 (i.e. an anticipated finding)—with 36.3% of the variance explained by this model (R^2= 0.397, Adjusted R^2 = 0.363; F= 11.720, p=.000). It makes sense that having received counseling in the past year would be a significant predictor of a higher self-efficacy level for performing COVID-19 risk reduction behaviors. Counseling would likely provide vital social support, which could enhance coping and reduce the effects of stress, as per Lakey and Cohen (2000). It also makes sense that a higher self-efficacy level for performing COVID-19 risk reduction behaviors (i.e. to ensure positive health outcomes) would be significantly predicted by a better physical health status. A lighter skin color tone being a significant predictor of a higher

self-efficacy level for performing COVID-19 risk reduction behaviors could be considered from the perspective mentioned earlier. Recall the analysis by Bajaj and Stanford (2021) on the relevance of Black people's direct exposure to contemporary everyday racism. Hence, those with lighter skin may be suffering less of a direct daily impact from everyday racism, or may be experiencing less stress, such that lighter skin predicts higher self-efficacy for performing risk reduction behaviors. Worthy of mention is the manner in which the Latinx sample had a mean for skin color closest to light skin tone (M=3.29, SD=1.26, min=1, max=5).

So, while a Black sample with darker skin might suffer from more everyday racism—as something not explored in this study, nor in that of Williams-Gunpot (2021), consider the potential suffering of a Latinx sample in the form of cultural stress. Recall how 46.5% (N=55) of the Latinx in the present study had experienced moderate to maximum/extreme cultural stress (scores 5 to 10) in the past year.

Finally, it is also possible that the regression models suffered from overfitting, given the use of 25 independent variables (i.e. Seo et al., 2021). Or, possibly the backward stepwise regression procedures suffered from the potential problems of not only overfitting, but also multicollinearity and the selection of nuisance variables rather than useful variables (i.e., Ho et al., 2021). Even worse, Babyak (2004) has warned that there is the risk that backward stepwise regression could produce findings that cannot be replicated or may not even exist in the population. Hence, all such limitations must be kept in mind when considering the backward stepwise regression findings.

Conclusion, Implications and Recommendations, and Study Limitations

This study recruited a largely female Latinx sample of adults (N=118) with 68.6% born in the U.S. Some 46.5% experienced moderate to maximum/extreme cultural stress (scores 5 to

10) in the past year, providing insight into how the unforgettable and historic year 2020 of the U.S. COVID-19 pandemic was experienced. With 31.4% (N=37) of the study participants not being U.S. born (e.g., 24.3% born in Venezuela, 18.9% born in Colombia, 13.5% born in Peru, 8.1% born in El Salvador, 8.1% born in Guatemala, and 8.1% born in Mexico), it was important that the social media recruitment message ended with "No immigration questions." The diverse Latinx sample of convenience recruited solely online via a social media campaign (e.g., Facebook, email, etc.) was well educated, having closest to a mean education level of a bachelor's degree with mean annual household income of $50,000 to $99,000. Some 66.1% were employed during the pandemic and 69.5% had been continuously employed pre-pandemic. These levels of employment, together with 31.4% not being U.S. born, suggested how the experience of moderate to maximum/extreme cultural stress for 46.5% of the sample may have been a significant factor in their historic pandemic year; meanwhile their past year *COVID-19 related stress was moderately high.*

Perhaps most noteworthy was how the Latinx sample experienced—during the historic COVID-19 year of 2020 in the U.S.— very high prevalence rates of self-reported depression and anxiety. These high rates of depression and anxiety were more than double those rates reported across samples globally (i.e. Luo et al., 2020). Specifically, rates of depression were 23% to 32%, globally; and, rates of anxiety were 28% to 38%, globally, as per Luo et al. (2020); whereas, 66.9% of the present Latinx sample reported past-year depression, and 78.8% reported past-year anxiety. Moreover, 45.2% of the Latinx sample in this study reported trauma in the past year. Not surprisingly, the Latinx sample experienced statistically significant declines in their self-rated mental health status from pre-pandemic to during the pandemic; and, this was a pattern repeated for significant declines in ratings of their physical health status from pre-pandemic to

during the pandemic. In this manner, the findings were reminiscent of warnings from the American Medical Association (AMA, 2020) that at risk Latinx communities were more vulnerable in the year of the COVID-19 pandemic due to many factors such as "historical disenfranchisement and racism" (AMA, 2020, p. 6).

The finding of high social support being experienced by the Latinx sample suggested how social support might have been serving as a potential buffer for their experiences of moderate to maximum/extreme cultural stress (i.e., experienced by 46.5% of the sample). Also potentially buffered by high social support were the Latinx sample's experiences of moderately high COVID-19 related stress, and high rates of depression and anxiety—that were more than double those seen across samples around the world (i.e., Luo et al., 2020). Consistent with the likely important role of social support, 44.1% had sought counseling in the past year, and the sample experienced closest to a good quality of life.

Meanwhile, the sample, had very high knowledge of COVID-19, a high intention to vaccinate/being already vaccinated at 87%. And, the sample endorsed the dissemination of the new "Our COVID-19 Knowledge Test" as a brief online e-health intervention they would recommend to others as a way to learn about COVID-19. Supporting the value of the new "Our COVID-19 Knowledge Test" as a brief online e-health intervention, there was evidence this True-False test with all True answers had a positive impact on not only self-rated *COVID-19 knowledge*, but also on self-rated *self-efficacy for COVID-19 risk reduction behaviors*. Results from paired t-tests showed that the "Our COVID-19 Knowledge Test" served as an effective brief e-health intervention, given how participants self-rated in quick succession their *COVID-19 knowledge* and *self-efficacy for COVID-19 risk reduction behaviors* for before *versus* after taking the True-False test; paired t-tests showed statistically significant increases in self-ratings for both

COVID-19 knowledge and *self-efficacy for COVID-19 risk reduction behaviors* after taking the True-False test. In this manner, the new "Our COVID-19 Knowledge Test" appeared to meet the standard suggested by the work of Braveman et al. (2014) where it is considered vital for communities to have access to valid sources of health information in order to be self-efficacious and take control of over their health.

A noteworthy Pearson correlation showed how **the higher the COVID-19 knowledge test score** on the "Our COVID-19 Knowledge Test," then the **lower** the risk of COVID-19 transmission in the home. This suggested how engagement in COVID-19 risk reduction behaviors in the home (e.g. not having celebrations or parties, and not having people in one's home in the same manner as before the pandemic) appeared to be associated with a higher level of COVID-19 knowledge. Also found via the regression predicting a **higher COVID-19 knowledge test score on** "**Our COVID-19 Knowledge Test"** was the significant predictor of a "low" extent of COVID-19 transmission risk in home (i.e., meaning preventive behaviors were being enacted, such as not having celebrations or visitors in the home at the pre-pandemic level).

An additional parallel finding showed via Pearson correlation that the **higher the self-efficacy for performing COVID-19 risk reduction behaviors—specifically for the after taking the "Our COVID-19 Knowledge Test" self-efficacy self-rating,** then the **lower** the risk of COVID-19 transmission in the home.

Collectively, the above findings affirmed, as per Quandt et al. (2020), how "knowledge and preventive behaviors" were important "to reduce COVID-19 spread in the community" (p. 1).

Additionally, investigating self-efficacy for performing COVID-19 risk reduction behaviors proved important, as this outcome variable demonstrated significant associations via Pearson correlations with other independent variables. For example, the **higher the self-efficacy**

for performing COVID-19 risk reduction behaviors—specifically for the after taking the "Our COVID-19 Knowledge Test" self-efficacy self-rating, then the **better** the physical health status during the COVID-19 pandemic (r= .369, p= .000) and the **better** the mental health status during the COVID-19 pandemic (r= .320, p= .000). Similarly, the regression predicting a **higher self-efficacy level for performing COVID-19 risk reduction behaviors—specifically for the after-taking "Our COVID-19 Knowledge Test" self-efficacy self-rating** found a significant predictor to be a **better** physical health status during the COVID-19 pandemic.

Implications and Recommendations

Numerous implications and recommendations may also be presented. These implications and recommendations arose from the study findings, as discussed below.

Recommendations for Future Research Including New Variables to Account for a Greater Percentage of the Variance in Regressions

The regression model predicting a higher COVID-19 knowledge test score on "Our COVID-19 Knowledge Test" had just 22.1% of the variance explained by the model (R^2= 0.254, Adjusted R^2= 0.221; F=7.573, p=000). And, the regression model predicting a higher self-efficacy level for performing COVID-19 risk reduction behaviors—specifically for the after-taking "Our COVID-19 Knowledge Test" self-efficacy self-rating had 36.3% of the variance explained by the model (R^2= 0.397, Adjusted R^2 = 0.363; F= 11.720, p=.000). Thus, despite each regression model having 25 independent variables included, yet more of the variance could potentially be explained; and, this suggests the need for future research to consider the inclusion of other independent variables.

In this regard, while the present study invitation ended with the statement, "No immigration questions," it is possible that independent variables subsumed under the topic of immigration might be relevant and contribute to a higher percentage of variance being explained

in future research. Such immigration related questions are recommended for inclusion in future research, potentially including the impact of having undocumented family members or being undocumented one's self.

Level of acculturation and extent to which the individual is bicultural, or degree to which they speak Spanish and/or English, might all be variables included in future research. Such variables might also help account for a greater percentage of the variance in predicting outcome variables in regression analyses. Such factors likely impact COVID-19 knowledge and/or access to reliable and valid health information sources, as well as the likely impact of self-efficacy for performing COVID-19 risk reduction behaviors; and, may also likely impact the experience of social support, quality of life, as well as depression/anxiety/trauma.

Recommendations for Future Research Including Trusted Community Leaders and Their Assisting with In-Person Data Collection

Another option is for future research post-pandemic to utilize in-person data collection where trusted community leaders bring together members of the Latinx population for post-pandemic in-person administration of the survey. This might permit attracting a much larger sample; and, might permit participants having a sufficiently high level of trust so as to answer question subsumed under the topic of immigration.

Issues related to immigration status might also be assessed in a post-pandemic, in-person survey administration with trusted community leaders present. This might permit exploring factors related to immigration status, such as lack of access to employment or lack of access to health insurance due to an undocumented status, along with related stress.

Additional Recommendations for Future Research—Or, Aspects of the Research Focus Are Now Outdated

Future research should also involve a replication with a larger nationally representative sample, perhaps using a random sample contacted by telephone—including the option of

answering the survey in English or Spanish. This would necessitate a grant-funded study. Also required would be resources to support translation and back-translation of study measures, again necessitating grant funding.

However, the reality is that, as of this late May to early June 2021 writing, the COVID-19 pandemic is on the decline in the U.S. in such places as the New York metropolitan region because of higher vaccination rates; although variants and COVID-19 mutations still exist and continue to spread to unvaccinated populations throughout the country where morbidity and mortality rates continue to rise. The research focus in this study may no longer be needed, deemed relevant, or seen as feasible as it was conceived in the present study. For example, public health guidelines are changing to accommodate the reality of large percentages of the population being vaccinated, as well as for low rates of COVID-19 infection within vaccinated communities in the U.S. Thus, in the U.S., there may no longer be a need in coming months for dissemination of the "Our COVID-19 Knowledge Test," given the emergent, likely post-pandemic period the U.S. is entering as of this late May to early June, 2020 writing.

Implications for Using Short Online Messages to Encourage Diffusion of the Innovation of Brief Online E-Health

Meanwhile, post-study completion with the Latinx sample, the new "Our COVID-19 Knowledge Test" was disseminated online in May 2021 with short messages encouraging adaptation for use in settings such as those in India and Brazil where the populations were experiencing a surge in COVID-19 infections.

To ensure access to evidence-based information during any future pandemic or future public health crisis, the use of short messages with suggestions for adapting the diffusion of the innovation of a newly created brief online e-health tool of a True-False test, with all True answers, may be important. Such messages may encourage diffusion of the innovation of brief

online e-health, such as sharing widely the new "Our COVID-19 Knowledge Test." For example, when the new "Our COVID-19 Knowledge Test" was disseminated online in May of 2021, after the present study was completed, the link to the True-False test with all True answers was accompanied by short messages, as follows:

> PLEASE SHARE THIS LINK TO EVERYONE YOU KNOW IN INDIA -- TEXT, TWEET, POST ONLINE:
>
> **https://tinyurl.com/LEARN-FACTS-ABOUT-COVID-19**
>
> - VOLUNTEERS, PLEASE READ THE FACTS ON RADIO SHOWS (etc..) IN INDIA, BRAZIL, ETC.
> - AND, TRANSLATE INTO YOUR LOCAL AND INDIGENOUS LANGUAGES.
> - ADAPT OR MODIFY INFORMATION FOR YOUR LOCAL SITUATION.
> - MAKE VOICE RECORDINGS IN YOUR LOCAL AND INDIGENOUS LANGUAGES AND WIDELY SHARE THEM IN COMMUNITIES.
>
> THERE IS AN ATTACHMENT YOU CAN FORWARD BY EMAIL, WHILE THE ABOVE LINK IS THE ATTACHMENT.

The above link (i.e., https://tinyurl.com/LEARN-FACTS-ABOUT-COVID-19) went to a document that included the "Our COVID-19 Knowledge Test," while also urging engagement in specific behaviors via additional short messages, as follows:

- Please read aloud with your family, friends and community all 44 items in the "Our COVID-19 Knowledge Test"…
- Please know all items are true facts (based on recommendations from the Centers for Disease Control and Prevention in the United States—with some recommendations being changed and revised during the pandemic)
- Please text, tweet, post on Instagram, post on Facebook, and on every online platform you can, the link you received to this important short e-health tool and save lives

In this manner, the short online messages shared on social media (e.g. email, Facebook, etc.) encouraged adaptation of the "Our COVID-19 Knowledge Test" for use in India, at the height of their COVID-19 infections and deaths in May 2021. The messages also urged translation of the True-False test with all True answers into local languages; and, also urged

reading aloud the questions and answers, including with family, friends, community, and on the radio.

Implications for Future Use of the Genre of True-False Tests with All True Answers

What emerges is the general value of the genre of a brief online e-health intervention in the form of a True-False test with all True answers, as demonstrated in this study. The "Our COVID-19 Knowledge Test" as a True-False test with all True answers was evaluated in this study; and, it emerged as valued by the Latinx sample to the extent that 80.2% would recommend it to others as a way to learn about COVID-19—as they would diffuse the innovation of such brief online e-health. This builds upon prior research using the genre of a brief online e-health intervention in the form of a True-False test with all True answers, as in Afram (2019) and Aiyedun (2014).

Implications for Rapid Creation of True-False Tests with All True Answers in Future Pandemics and Public Health Crises

An important implication is that the rapid creation and dissemination of a True-False test with all True answers is highly recommended for future pandemics, or future public health crises. This genre of brief evidence-based online e-health may serve to counter what was witnessed in the 2020 COVID-19 pandemic: i.e., an "infodemic" characterized by "the proliferation of false and misleading information about the virus, how it spreads, how to cure it and who is 'behind' it" (Roozenbeek et al., 2020, p. 1).

Implications for Using Short Tools in Future Research Post-Pandemic

There are additional implications for using some of the other tools used in the present study. For example, some of the tools used in the present study may have value in post-pandemic research. It may be important to assess post-pandemic the levels of past-year stress being experienced by Latinx adults, as well as their experiences of cultural stress, social support,

quality of life, and depression/anxiety/trauma. An important aspect of this study is how the pandemic forced the creation of short tools posing the lowest level of response burden, while the resultant short tools may have value in future research.

Implications for Using Short Tools for Screening

The short tools for assessing past year stress, cultural stress, social support, quality of life, and depression/anxiety/trauma may all be considered for use as short screening tools. The short screening tools could be used by health educators, community health workers, nurses, and other medical and public health professionals in hospital, clinic, community, and church settings. Their use could permit rapid identification of those in need of referral to counseling or to groups for greater social support.

Limitations

Finally, a number of study limitations are noteworthy. As an online study, limitations included the risk of excluding the experiences of those members of the Latinx population who lack access to computers, laptops, tablets or smart phones, and who do not have reliable, consistent, or any internet service. In particular, the older Latinx population traditionally mistrusts the internet and many do not have smart phones, tablets, or computers.

Another limitation involves how the Latinx community tends to prefer, value, and trust in-person communication, potentially related to concerns about their own or their family members' immigration status. As a result of the COVID-19 pandemic, the option to conduct in-person research did not exist—and even the posting of flyers in community-based setting with a link to the online survey was not possible.

Normally, even when conducting online survey research, it is common to post flyers inviting study participation in places such as a church, school, library or grocery store; these are

places where community information gathering and trust-bonding typically takes place for Latinx communities.

Posing an additional study limitation, this study did not include translating and back-translating the study tools into Spanish, as the requisite resources for such a major undertaking were not available. Many undocumented and primarily Spanish-speaking Latinx community members were excluded from the study participation, given the study was not conducted in their native language. Thus, an important study limitation involves how some of the most vulnerable and at risk members of the Latinx population where excluded from study participation, and given the study requiring the ability to read English on a 12th grade level.

Other limitations of the study included the use of volunteers, resulting in a sample of convenience. Those who volunteered may been more assimilated, more acculturated, or had less fear over issues of being themselves or having family who were undocumented immigrants. This suggests a biased sample was likely recruited. On the other hand, less likely to volunteer for study participation were those with an undocumented immigration status, or with family members or friends with that status; they may have been unwilling to take the survey out of fear of deportation or incarceration of themselves or family members. The year 2020 of the COVID-19 pandemic coincided with the Trump Administration's anti-immigration and anti-Latinx rhetoric, racism, hate speech and cruel, hostile policies—all of which likely exacerbated fears and anxieties among the undocumented immigrant population and/or among those with undocumented family and friends. To address potential underlying fears among the undocumented or those with undocumented family and friends, the recruitment message included a final brief statement: "No immigration questions." Yet, the reality of immigration-related fears, mistrust, and anxieties still likely persisted in creating a biased sample of volunteers.

Also, as the population arguably most negatively impacted by the COVID-19 pandemic, the Latinx population may have been experiencing considerable life stress, contributing to a lack of study participation. If one was an essential worker in a grocery store, or a rural essential farmworker, or an unemployed former restaurant worker who was attempting to persevere in feeding their family during the pandemic, then study participation would seem an absurd excess. Or, if one had lost a loved one from COVID-19, or were ill themselves with COVID-19, again taking an online survey would not be a priority at all. Thus, the survey was made as short as possible to reduce response burden for this vulnerable population (i.e., survey took approximately 15 minutes). To further reduce the burden and potential stress on Latinx study participants during a pandemic, there were no open-ended questions, which would have required a written response. This served to further shorten the time needed to complete the survey.

Hence, all of these limitations should be kept in mind when evaluating the present study's findings. And, lastly, future research should consider all of these study limitations and seek meaningful solutions and adaptations that might be implemented in future research, thereby ensuring the design of culturally appropriate research for use during future public health crisis and pandemics.

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Appendix A: Letter of IRB Approval

Attachments:
- PAMELA CRUZ - INFORMED CONSENT.pdf
- Exemption Notification - IRB ID: 21-246.pdf

TEACHERS COLLEGE
COLUMBIA UNIVERSITY

Teachers College IRB *Exempt Study Approval*

To: Pamela Cruz
From: Myra Luna Lucero, Research Compliance Director
Subject: IRB Approval: 21-246 Protocol
Date: 03/28/2021

Thank you for submitting your study entitled, "*Latinx Adults and the COVID-19 Pandemic in the United States: Evaluating a COVID-19 Knowledge Test - and Identifying Predictors of High Knowledge and Self-Efficacy for COVID-19 Risk Reduction Behaviors*;" the IRB has determined that your study is **Exempt** from committee review (Category **2**) on 03/28/2021.

Due to COVID-19 quarantine, all in-person study activities with human subjects are suspended. Following guidance from New York State and Teachers College, the Institutional Review Board will announce when in-person research can resume and what steps to take at that time.

Please keep in mind that the IRB Committee must be contacted if there are any changes to your research protocol. The number assigned to your protocol is **21-246**. Feel free to contact the IRB Office by using the "Messages" option in the electronic Mentor IRB system if you have any questions about this protocol.

Please note that your Consent form bears an official IRB authorization stamp and is attached to this email. Copies of this form with the IRB stamp must be used for your research work. Further, all research recruitment materials must include the study's IRB-approved protocol number.

As the PI of record for this protocol, you are required to:

- Use current, up-to-date IRB approved documents
- Ensure all study staff and their CITI certifications are on record with the IRB
- Notify the IRB of any changes or modifications to your study procedures
- Alert the IRB of any adverse events

You are also required to respond if the IRB communicates with you directly about any aspect of your protocol. Failure to adhere to your responsibilities as a study PI can result in action by the IRB up to and including suspension of your approval and cessation of your research.

You can retrieve a PDF copy of this approval letter from Mentor IRB.

Best wishes for your research work.

Sincerely,
Dr. Myra Luna Lucero
Research Compliance Director
IRB@tc.edu

Appendix B: The Study Email

WE ARE INVITING LATINX ADULTS

TO VOLUNTEER TO TAKE A 15 MINUTE SURVEY

"ABOUT YOU AND THE COVID-19 PANDEMIC"

FOR A 1 IN 250 CHANCE TO WIN 1 OF 3 $100 AMAZON GIFT CARDS

Institutional Review Board Protocol # 21-246

The Research Group on Disparities in Health (RGDH) within the Department of Health and Behavior Studies at Teachers College, Columbia University, in New York, New York is conducting a study. This study seeks Latinx adults who are willing to answer questions "About You and the COVID-19 Pandemic." We are seeking to understand what adults know about COVID-19, their level of confidence for preventing the spread (transmission) of COVID-19— and the factors related to what they know and their confidence level. There are NO questions on immigration. Your identity cannot be linked in any way to your survey responses. What we learn through this study will be used to reduce the risk of COVID-19 transmission for Latinx adults, their families, and communities.

- Participation in this survey is limited to the first 250 volunteers
- Completing the online survey takes about 15 minutes
- Those who complete the survey will have a 3 in 250 chance of winning 1 of 3 $100 Amazon gift cards
- Please click on the link below to view the informed consent, learn about your rights as a participant and proceed to the survey.

- We also invite you to forward this email to others who may be willing to volunteer, or send them a text message, or tweet out the message, below:

Section 1.01 CLICK ON: https://tinyurl.com/LATINX-ADULTS-INVITED TO TAKE 15 MINUTE SURVEY (if age 18 & up) "About You & COVID-19" for chance to win 1 of 3 $100 Amazon cards. No immigration questions.

THANK YOU FOR YOUR PARTICIPATION!

If you have any questions or would like to have additional information about the study, please contact:

PAMELA CRUZ FORD, MA, MS, Doctoral Candidate, Department of Health and Behavior Studies, Teachers College, Columbia University, Box 114, 525 W. 120th Street, New York, NY 10027; pc285@tc.columbia.edu;

BARBARA C. WALLACE, Ph.D., Director, Research Group on Disparities in Health, Professor of Health Education, Clinical Psychologist, Department of Health and Behavior Studies, Teachers College, Columbia University, Box 114, 525 W. 120th Street, New York, NY 10027; bcw3@tc.columbia.edu; Study Contact Number: 267-269-7411

Appendix C: The Study Text/Tweet

CLICK ON: https://tinyurl.com/LATINX-ADULTS-INVITED TO TAKE 15 MINUTE SURVEY (if age 18 & up) "About You & COVID-19" for chance to win 1 of 3 $100 Amazon cards. No immigration questions.

Appendix D: Informed Consent and Participants' Rights Forms

Teachers College, Columbia University

525 West 120th Street New York

NY 10027

212 678 3000

INFORMED CONSENT

IRB Protocol Number 21-246

Protocol Title:

Latinx Adults and the COVID-19 Pandemic in the United States: Evaluating a COVID-19 Knowledge Test—And Identifying Predictors of High Knowledge and Self-Efficacy for Risk Reduction Behaviors

Principal Researcher: Pamela Cruz Ford, MA, MS

Teachers College, Columbia University

212-470-4882; pc285@tc.columbia.edu

INTRODUCTION You are invited to participate in this research study called the "Latinx Adults and the COVID-19 Pandemic in the United States: Evaluating a COVID-19 Knowledge Test—And Identifying Predictors of High Knowledge and Self-Efficacy for Risk Reduction

Behaviors." You may qualify to take part in this research study if you: 1) self-identify as Latinx, Hispanic, or Latino; 2) are at least age 18 or older; 3) have been living continuously within the United States since March 2020—without any travel outside the country for more than 4 weeks; 4) are able to read and understand English on the 12th grade level; and, 5) do not believe that COVID-19 is a "hoax" or is not real, so you would be able to answer questions about COVID-19. Approximately 250 people will participate in this study and it will take about 15 minutes of your time to complete.

WHY IS THIS STUDY BEING DONE? This study is being done to learn what adults know about COVID-19, their level of confidence for preventing the spread (transmission) of COVID-19—and the factors related to what they know and their confidence level. What we learn through this study will be used to reduce the risk of COVID-19 transmission for Latinx adults, their families, and communities.

Section 1.02 WHAT WILL I BE ASKED TO DO IF I AGREE TO TAKE PART IN THIS STUDY?

If you decide to participate in the study, you will answer a series of questions in an online survey. This will take about 15 minutes of your time. The questions will cover the following: your personal background; ratings of your health status; ratings of your experiences of any social support, stress, anxiety, depression, and your quality of life; and, questions about what you know about COVID-19, including your confidence to prevent the spread (transmission) of COVID-19.

Section 1.03 <u>WHAT POSSIBLE RISKS OR DISCOMFORTS CAN I EXPECT FROM TAKING PART IN THIS STUDY?</u> The risks of study participation include the possibility that you may feel some discomfort from taking the survey or some stress due to some of the questions. However, your participation in this study is completely voluntary, and you can stop at any time.

Section 1.04 <u>WHAT POSSIBLE BENEFITS CAN I EXPECT FROM TAKING PART IN THIS STUDY?</u> There is no direct benefit to you for participating in this study.

<u>WILL I BE PAID FOR BEING IN THIS STUDY</u>? You will not be paid to participate. However, when you complete the survey you will be invited to enter your email address and to hit a "submit" button—so that you are officially entered into a drawing for a chance to receive a prize (i.e., 1of 3 bar coded Amazon gift certificates for $100). You do not have to enter the lottery drawing to complete the survey. Once you submit your email address, then it will automatically be entered into a private and secure data base that even the principal investigator cannot access. Once 250 people have completed the entire survey, you will have a 3 in 250 chance of winning 1 of 3 $100 bar coded Amazon gift certificates. The www.Amazon.com gift certificates will be sent to three randomly chosen e-mail accounts using a secure online program. This occurs without in any way linking your identity to the survey results. The principal investigator is not able to view any of the e-mail addresses to which the gift certificates are sent. Only the 3 winners will be contacted.

WHEN IS THE STUDY OVER? CAN I LEAVE THE STUDY BEFORE IT ENDS?

The study is over when you have completed the online survey. However, you can leave the study at any time even if you have not finished.

Section 1.05 **PROTECTION OF YOUR CONFIDENTIALITY** The study does not involve collecting any of your personal identifying information, such as your name or address, allowing you to remain anonymous. (NOTE: Recall, as per what is above, you can elect to enter your e-mail address to enter the drawing for a chance to receive a prize. However, this occurs without in any way linking your identity to your survey answers, and the principal investigator cannot view any e-mail addresses.) Teachers College, Columbia University has determined that www.Qualtrics.com provides a secure platform for the online survey you will take. The survey data files will also be saved on the primary researcher's password protected computer. Regulations require that research data be kept for at least three years.

For quality assurance, the study team, and/or members of the Teachers College Institutional Review Board (IRB) may review the data collected from you as part of this study. Otherwise, all information obtained from your participation in this study will be held strictly confidential and will be disclosed only with your permission or as required by U.S. or State law.

HOW WILL THE RESULTS BE USED? The results of this study will be published in journals and presented at academic conferences. This study is being conducted as part of the doctoral dissertation of the principal investigator.

WHO CAN ANSWER MY QUESTIONS ABOUT THIS STUDY?

If you have any questions about taking part in this research study, you should contact the primary researcher, Pamela Cruz Ford, at 212-470-4882 or at pc285@tc.columbia.edu. You can also contact the sponsor/supervisor of this research study, Dr. Barbara Wallace, at bcw3@tc.columbia.edu or 267-269-7411.

If you have questions or concerns about your rights as a research subject, you should contact the Institutional Review Board (IRB) (the human research ethics committee) at 212-678-4105 or email IRB@tc.edu. Or you can write to the IRB at Teachers College, Columbia University, 525 W. 120th Street, New York, NY 10027. Box 151. The IRB is the committee that oversees human research protection for Teachers College, Columbia University.

PARTICIPANT'S RIGHTS

- I have read the Informed Consent Form and have been offered the opportunity to discuss the form with the researcher.
- I have had ample opportunity to ask questions about the purposes, procedures, risks and benefits regarding this research study.
- I understand that my participation is voluntary. I may refuse to participate or withdraw participation at any time without penalty.
- The researcher may withdraw me from the research at his or her professional discretion. I understand that if I take the survey more than once I will be eliminated from the study.
- If, during the course of the study, significant new information that has been developed becomes available which may relate to my willingness to continue my participation, the researcher will provide this information to me.
- Any information derived from the research study that personally identifies me will not be voluntarily released or disclosed without my separate consent, except as specifically required by law.

- I should receive a copy of the Informed Consent Form document. (I understand that I can download it).

By checking the "I agree" box, you agree to participate in the study. You also confirm you self-identify as Latinx, Hispanic, or Latino, are at least age 18 or older, have lived continuously in the United States since March 2020 (no outside travel for more than 4 weeks), are able to read and understand English on the 12th grade level, and do not believe COVID-19 is a hoax or not real. ⎿| ***I agree.*** ⎿| ***I do not agree***

Appendix E: Screening Survey

Screening Tool for the Survey for Latinx Adults "About You and COVID-19"

Teachers College, Columbia University
Institutional Review Board (IRB) Protocol # 21-246

We invite adults who self-identify as Latinx, Hispanic, or Latino to spend about 15 minutes answering questions "About You and COVID-19." Answer the following questions to see if you qualify to participate:

1- Are you an adult age 18 or above?
Yes___No____

2- Do you self-identify as Latinx, Hispanic, or Latino?
Yes___No____

3-Have you been living continuously within the United States since March 2020—without any travel outside the country for more than 4 weeks? Yes___No____

4-Are you able to read and understand English on the 12th grade level?
Yes___No____

5-Some people believe that COVID-19 is a hoax, or is not real, so they would NOT be able to answer questions about COVID-19, as something that does not exist for them. Do you feel able to answer questions "About You and COVID-19"?
Yes___No____

6-Are you able to devote about 15 minutes to this study at this time—for a chance to win one of three $100 Amazon gift cards?
Yes___No____

If they answered YES to all of the above questions they access survey. If they answered NO to any of the above questions they receive this message: Thank you for your time, but, unfortunately, you are not qualified to participate in this study.
Feel free to invite others to:

Section 1.06 CLICK ON: https://tinyurl.com/LATINX-ADULTS-INVITED TO TAKE 15 MINUTE SURVEY (if age 18 & up) "About You & COVID-19" for chance to win 1 of 3 $100 Amazon cards. No immigration questions.

Appendix F: Survey for Latinx Adults "About You and COVID-19"

Teachers College, Columbia University

Institutional Review Board (IRB) Protocol # _____

INSTRUCTIONS: Please answer the following questions in this survey.

Part I: Basic Demographics (BD-10)

[This survey part follows a common tool used by the Research Group on Disparities in Health (RGDH). For example, it was used in Williams-Gunpot (2021). See Williams-Gunpot, D. (2021). *Evaluating "Our Covid 19 Knowledge Test" as a brief online e-health intervention with African American adults: Identifying predictors of high Covid-19 knowledge and self-efficacy for Covid-19 risk reduction behaviors*. Doctoral Dissertation. Teachers College, Columbia University.]

1-I am: ___Female ___ Male ___Other (meaning_____)

2-My age is: _____ [DROP DOWN MENU 24 – 80]

3-My race/ethnicity is as follows: (Please mark all that apply)

__Latinx, Hispanic / Latino (including Puerto Rican, Mexican, Mexican American, Chicano, Cuban, Columbian, South American, Spain, other Spanish, etc)

(NOTE: Exit/exclude those who select anything else)

__White / Caucasian / European American

__Asian (Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, or other Asian)

__American Indian / Alaska Native

__Native Hawaiian / Pacific Islander

__Arab American / Middle Eastern

__Other group(s) (Please specify_____)

4-My skin color is

a. ___Very Dark b. ___Dark c. ____Medium to Dark

d. ___Medium to Light e. ___Light f. ____Very Light g.__White

5-Were you born in the United States? ___Yes ____No

If answered "No, "Where was you place of birth or your country of origin?

Country of origin? _____

6-I AM currently:

a. ___Single b. ___Married c. ___Separated d. ___Divorced

e. ___Widowed f. ___In Domestic Partnership g. ___Living with Significant Other

7-How many children do you have? [Drop down menu 1-10]

8-The highest level of education that I completed is:

- ☐ Less than high school
- ☐ High school or high school equivalent (GED)
- ☐ Some college
- ☐ 2-year college degree (Associate Degree)
- ☐ 4-year college degree (Bachelor's Degree)
- ☐ Master's degree
- ☐ J.D. - Lawyer
- ☐ Doctoral Degree (Ph.D., Ed.D., etc.).
- ☐ Medical Degree (M.D., D.D.S., etc.)
- ☐ ___Other Degree or Certification. Please explain _____)

9-My yearly household income is:

$10,000 to $19,000

$20,000 to $39,000

$40,000 to $49,000

$50,000 to $99,999

$100,000 to $199,999

$200,000 to $299,000

$300,000 to $399,000

$400,000 to $499,000

$500,000 to $799,000

$800,000 or More

Part II: Employment and Risks During the COVID-19 Pandemic

(ECRDCP-9)

[This is a new scale created for use by the Research Group on Disparities in Health (RGDH), having been introduced for pandemic era research (e.g. Williams-Gunpot, 2021). It produces a: variable for prior stable work pre-pandemic; a variable for current employment; and a variable for level of risk at work—which is scored on scale of 1=low risk to 7=high risk]

[Variable for Prior Stable Work] Scored yes=1, no=0

1-I worked continuously and without interruption before the COVID-19 pandemic, or in the year 2019 **_Yes _No**

[Variable for Employed or Not] Scored yes=1, no=0

2-I am currently

a. ____employed
b. ____unemployed

IF SELECT UNEMPLOYED, THEN SKIP TO SECTION AFTER THIS ONE
IF SELECT EMPLOYED, THEN ANSWER THIS SECTION

[Variables for More Risky Work—for those who Screen as EMPLOYED, above]

3-I have work that can be done online, allowing work from home sometimes or all the time **_Yes _No (reverse score)**

4-I have work that requires me to go and work in-person—sometimes or all the time **_Yes _No**

5-I have work that requires me to interact with people in public, including people who are strangers **_Yes _No**

6-I have work that requires me to be *less than 6 feet from other people* at least some of the time **_Yes _No**

7-I was told I am considered an essential worker **_Yes _No __**

8-I went to work even when I suspected and/or knew that *my co-workers or people there around me had COVID-19* **_Yes _No __**

9-I went to work even when I suspected and/or knew that *I had COVID-19* **_*Yes* _No**

Part III: Home Life During the COVID-19 Pandemic and Extent of Risk Reduction (HLDCP-ERR-3)

[This is a new scale created for use by the Research Group on Disparities in Health (RGDH). **Scale: Extent of Multi-Generational Living/Characterizing Household Size.** Score 1-smallest size of household to 9-largest size of household; **Scale 2: Risk Reduction Measures in Home.** Score via 2 items: *5-always 4_almost always 3_sometimes 2_rarely 1 _never;* and, a High Score means (5, 4 = risk reduction measures ARE NOT BEING taken.]

[Variables for Extent of Multi-Generational Living/Household Size]

1-Please check all those items that accurately describe where you have lived and slept in the past year. Check all that apply:

1__I lived alone

2__I lived with a partner or spouse

3__An infant/baby (or infants/babies) lived there

4__Toddlers or very young children (not yet school age) lived there

5__School-age children lived there

6__Adolescents or teenagers lived there

7__College age youth or young adults lived there

8__Other adults lived there (e.g. adult children, other adults)

9__Grandparents or senior citizens lived there (or anyone age 60 and above) lived there (in addition to you and your partner/spouse,)

[Risk Reduction Measures in Home]

2-We have visitors who come inside our home in the exact same way as before the COVID-19 pandemic.

5-always 4_almost always 3_sometimes 2_rarely 1 _never

3-We have celebrations, parties, and social events with family and friends (who do not live with us) inside of our home in the same way as before the COVID-19 pandemic.

5-always 4_almost always 3_sometimes 2_rarely 1 _never

Part IV: Personal Health Background—Current and Before Pandemic (PHB-CABP-11)

[This is a commonly used tool created for by the Research Group on Disparities in Health, while some items were eliminated to reduce response burden during the pandemic. Questions about having had COVID-19 or thinking the pandemic was a hoax were added for pandemic era studies. And, also added to ratings of physical health status and mental/emotional health was an additional task: to provide ratings for before and now/during the pandemic for their physical health status, as well as for their mental health status. Some ending questions were also eliminated. The present study uses a pandemic era modification by adding options for before and currently during the COVID-19 pandemic; and this permits a paired t-test to compare ratings of: physical health before pandemic versus currently; mental/emotional health before pandemic versus currently. To further reduce response burden, eliminated was a question about weight having stayed about the same, or if they lost weight, or gained weight (or combinations of these) during the pandemic.]

1-Please check, below, what best describes you:

__I had COVID-19 at some point in the past year, or may still have it (long-hauler) **__Yes __No __Not Sure DICHOTOMOUS YES-1. NO-0**

__I think COVID-19 is a hoax; it does not exist. So, I cannot answer questions about COVID-19. **__Yes __No __Not Sure <u>NOTE: If select YES✍exclude from study</u>**

For BEFORE the COVID-19 pandemic:

2-I rate my overall **physical health** status as

1-Very Poor. 2-Poor. 3-Fair. 4-Good. 5-Very Good. 6-Excellent

----

For NOW, DURING the COVID-19 pandemic:

3-I rate my overall **physical health** status as

1-Very Poor. 2-Poor. 3-Fair. 4-Good. 5-Very Good. 6-Excellent
----------[paired t-test comparing 2 and 3]-----
For BEFORE the COVID-19 pandemic:
4-I rate my overall **mental/emotional health** status as
1-Very Poor. 2-Poor. 3-Fair. 4-Good. 5-Very Good. 6-Excellent
For NOW, DURING the COVID-19 pandemic:
5-I rate my overall **mental/emotional health** status as
1-Very Poor. 2-Poor. 3-Fair. 4-Good. 5-Very Good. 6-Excellent
----------[paired t-test comparing 2 and 3]-----
6-My current height (feet) [DROP DOWN BOX, 4-9]
7-My current height (inches) [DROP DOWN BOX, 0-11]
8-My current weight (in pounds) [DROP DOWN BOX, 70-400]
[6,7, 8 – for calculation of BMI)

Part V: Single Item Rating of Risk of Providing Socially Desirable Responses (SIR-RPSDR-1)

[Note: In 2019, this was introduced as a new single item scale created for first time use by Dr. Barbara Wallace in studies conducted by the Research Group on Disparities in Health [RGDH], and for ongoing use by the RGDH. For example, this tool was used by Torez (2019) and Laryea (2019). See*: Torez, M. (2019). An online investigation into Internet Gaming Disorder (IGD), comorbidity, and psychosocial issues: A comparison of American and Chinese gamers—and predictors of meeting criteria for a formal diagnosis of IGD*. Doctoral dissertation. Teachers College, Columbia University. See: Laryea, E. (2019). *An online mixed-methods study assessing nurses' attitudes, knowledge, skill/ability, and perceived barriers with regard to adherence to the national pressure ulcer advisory panel's clinical practice guidelines*. Doctoral dissertation. Teachers College, Columbia University. Note: Laryea (2019) found that the new one item measure of social desirability was one of two significant predictors of nurses' higher personal skill/ability rating for managing patients' pressure ulcers. This was noteworthy, as the well-known 13-item measure of social desirability (i.e. Crowne, D., & Marlowe, D. (1960) A new scale of social desirability independent of psychopathology. *Journal of Consulting Psychology, 24*(4), 349-354.] similarly was found to be the sole significant predictor of nurses' ratings for a higher personal skill/ability for managing patients' pressure ulcers. Hence, there is value in reducing the burden of time on study participants and using in this study the new one item measure of social desirability, especially, given the stress of the pandemic.]

1-I sometimes say things that I think will please people, or what I think they want to hear—versus the honest truth, which might be difficult or painful for other people to hear and accept, or might lead them to judge me harshly…

I rate myself on a scale of 0 to 10, as follows:

0	1	2	3	4	5	6	7	8	9	10
0-I am not like this at all										10-I am like this all the time

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Part VI: Perceived Social Support Scale (PSSS-3)

[This is a common tool used by the Research Group on Disparities in Health (RGDH), having been used by Lian (2017). See: Lian, Z. (2017). *Predictors of depression/anxiety, mental health service utilization, and help-seeking for Chinese international students: Role of acculturation, microaggressions, social support, coping self-efficacy, stigma, and college staff's cultural competence and cultural humility*. Doctoral Dissertation, Teachers College, Columbia University. Note: For this study, to reduce the burden of time during the stress of the ongoing pandemic, a new one-item version of the scale was created by combining the essence of 5 questions into one description of what having social support "means." Participants then indicate the number of people they have in their life, using the 5-option scale. This study innovated the use of an additional 2 items ascertaining number of people lost during the pandemic, or who experienced a change in circumstances—so there has been a loss in social support, as a new variable. NOTE: In the present study, the low numbers led to items # 2 and # 3 being combined into one dichotomous variable for any loss of social support from death or change in circumstances (yes=1, no=0)]

Having SOCIAL SUPPORT means having people in your life who provide the following kinds of support and assistance: you can ask them for advice, or receive words of encouragement; get money or get food in an emergency; or have a place to temporarily wait for help, or stay or live in an emergency.

[Social Support Variable].

1-Please indicate the extent to which you experience SOCIAL SUPPORT in your life at this time (i.e., right now):

1. I have no one like this in my life right now
2. I have at least 1 one person like this in my life right now
3. I have at least 2 people like this in my life right now
4. I have 3-5 people like this in my life right now
5. I have 6 or more people like this in my life right now

[Loss of Social Support Variable]

2-How many people who **used to provide you with social support** died during the COVID-19 pandemic? [drop down box for #]

3-How many people experienced a change in their circumstances—so they can no longer provide social support to you? [drop down box for #]

Part VII: Rating Your Quality of Life Scale (RYQOL-S-1)

[This was a scale created for use in the Mecklembourg (2019) study, and for use by the Research Group on Disparities in Health (RGDH) by Dr. Barbara Wallace. See: Mecklembourg, E. (2019). *African American breast cancer survivor's online study of factors related to quality of life: Health status, posttraumatic growth, religiosity/spirituality, social support, partner support, stress, depression, anxiety, and coping self-efficacy*. Doctoral dissertation. Teachers College, Columbia University. It is based on the main areas covered in the quality of life scale created by Gordon and Siminoff (2010): i.e. specifically, physical function, social support, body image, emotional function, coping, cognitive function (excluding their future orientation, and breast cancer impact).]

Please rate yourself, after reading the following:

Please think about the **quality of your life,** including the following: my **ability to function physically** (my level of strength, tendency to experience fatigue, ability to walk up and down

stairs, ability to perform physical activities around the house, ability to move my arms and legs, degree to which I feel pain in my body); my **amount of social support** (number of people I can rely on for help, including in a crisis); my **feelings about my body image** (attractiveness, finding clothing I like to wear); my **emotional functioning** (degree of depression, anxiety, worry, uncertainty); and my **mental functioning** (ability to concentrate, remember things, think clearly). Keeping all of this in mind, **please rate your quality of life at the present time**:

I rate my quality of life as:

__1-Very poor __2-Poor __3-Fair __4-Good __5-Very Good __6-Excellent

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Part VIII: Past-Year Covid-19 Related Stress—And Cultural Stress (PY-CRS-ACS-1)

[This is a new tool created in the year 2020 for pandemic era research for use by the RGDH, while it introduces a *cultural stress scale* created by the Principal Investigator and her dissertation sponsor, Dr. Barbara Wallace—and for use by RGDH. The first scale on *past-year COVID-19 related stress* was introduced for pandemic era research (i.e. Williams-Gunpot, 2021), while reduced from an 8-item scale to a one item scale for the present study: i.e. thereby further reducing response burden. The one item combines 8 areas of potential stress into one question; further, the present study expanded the focus by adding a 9th area involving stress from sickness and death. All 9 combined areas create a description of potential past-year stress experienced during the pandemic. The item is scored on a 10-point Likert scale ranging from 1=I had no stress to 10=I had maximum/extreme stress. In addition, this study created a new one item on past year *cultural stress scale*, scored on a 10-point Likert scale ranging from 1=I had no stress to 10=I had maximum, extreme stress]

1-Please think about all the changes you have experienced due to the COVID-19 pandemic. These changes may have caused you **stress (tension, pressure, worry, anxiety**).

You may have experienced stress from your own experiences, or those of your family members in the following areas:

stress from sickness and death; shopping stress; work stress; money stress; food stress; housing stress; school stress (e.g. children in your family); technology stress; stress from societal changes

Please rate all the stress in your life in the past year that was related to <u>COVID-19</u>:

0 1 2 3 4 5 6 7 8 9 10

0= I had NO stress ***10=I had MAXIMUM, EXTREME stress***

2-In the past year, there was also an increase in deportations and hate crimes (violence) toward Latinos. This may have created **cultural stress** for members of the Latinx population (e.g. worries surrounding documentation issues and fears of deportation; or concerns about increased discrimination, hate, etc.).

Please rate all the stress in your life in the past year that was related to <u>cultural stress</u>:

0 1 2 3 4 5 6 7 8 9 10

0= I had NO stress ***10=I had MAXIMUM, EXTREME stress***

Part IX: Retrospective Depression, Anxiety, and Trauma Scale (R-DATS-4)

[This is shorter version of a scale created for use in Lian (2017), and since used in numerous studies (e.g. Williams-Gunpot, 2021)—as a common tool used by the RGDH. In contrast to Lian (2017), this study *does not* ask about any depression or anxiety experienced in the past 3, 6, and 12 months. In contrast, pandemic era research studies only ask about past-year experiences of depression and anxiety, while adding trauma. Also, added for pandemic-era research was a question about past year trauma, as in Williams-Gunpot (2021). Scoring responses for past year depression (yes=1, no=0), anxiety (yes=1, no=0), and trauma (yes=1, no=0), these scores generate a composite *mental distress variable* for use in analyses, while creating a mean, standard deviation,

minimum (0) and maximum (3) scores for a *mental distress variable*. The counseling question appears just once (i.e. for past year versus after each mental distress category in Lian, 2017) and includes new options, as shown below, for sources of counseling.]

Depression is an overwhelming feeling of intense sadness. It can include feeling helpless, hopeless, and worthless. It can sometimes be expressed through angry outbursts, as well as bursting into tears. There can also be loss of appetite, or an increase in appetite. There can also be difficulty sleeping or oversleeping. In addition, there can be a loss of interest in your activities. Such a depression can last for days or weeks. This goes beyond typical feelings of sadness, such as following some disappointment.

1-Do you think you experienced any **depression** in the past year or 12 months? ____No ____Yes

Anxiety is an overwhelming and intense feeling of nervousness, fear, tension, powerlessness, and apprehension. It can reach a peak so there are moments of panic where one's heart may be pounding/beating quickly, or there is rapid breathing/difficulty breathing. A person may also experience sweating and trembling. Sometimes it can be so intense that one has trouble concentrating/thinking, leaving the house, or trouble being around other people. The fear can be very intense, and one can feel like there is some impending danger. This goes beyond typical feelings of nervousness, such as when anticipating a new situation, or something unexpected, or unknown.

2-Do you think you experienced any **anxiety** in the past year or 12 months? ____No ____Yes

Trauma is the most shocking and horrible thing to ever happen to a person (unless prior trauma)—such as: serious accident or fire; seeing someone seriously injured or die; war; earthquake/flood; physical/sexual abuse; or, a loved one's homicide, suicide, or other tragedy. Trauma symptoms *may* include: anxiety; nightmares; feeling numb, unable to love, and detached with no interest in spending time with others; guilt about surviving if others did not; flashbacks from trauma as images that unexpectedly "pop up" in the mind; avoiding reminders of trauma; and problems concentrating.

3-Do you think you experienced any **trauma** in the past year or 12 months? ____No

____Yes

Receipt of Counseling

4-In the past year, did you seek out any kind of counseling or advice for any depression, anxiety, or trauma—such as from a mental health professional, or other helper, or family member?

____Yes ____No ___Not Applicable/ No experience of depression/anxiety/trauma

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Part X: Our COVID-19 Knowledge Test (OCKT-44)

[This is a new tool created for use by the Research Group on Disparities in Health (RGDH). It follows prior research using such a true-false tool with all true answers as a brief online e-health intervention: See Afram, P.S. (2019): *Black men's knowledge of prostate cancer and screening and vitamin D screening and supplementation: Predictors of high self-efficacy to talk to medical providers*. Doctoral dissertation, Teachers College, Columbia University. Also see Aiyedun, A. (2014). *Predictors of high levels of knowledge of the HIV window period among diverse men: An online study that includes evaluations of an avatar video intended as e-health on the HIV window period*. Doctoral dissertation, Teachers College, Columbia University.]

[NOTE: The OCKT-44 score can range from 0-44; and this score is the first (of two) study outcome/dependent variables.]

Please indicate if the following statements are **True** or **False**:

1) Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is responsible for the disease known as COVID-19. **_True _False**

2) COVID-19 is a very serious, highly contagious disease that is easily spread (transmitted), may cause severe illness and death, and is much more deadly than flu. **_True _False**
3) When a person infected with COVID-19 coughs, sneezes—or breathes, talks, sings, or shouts—COVID-19 is spread (transmitted) as droplets in the air **_True _False**
4) COVID-19 droplets can remain in the air of a room and on surfaces (table tops, etc.) for *many hours*; that is why people are told to open windows, circulate air, and clean and disinfect all surfaces in rooms. **_True _False**
5) COVID-19 droplets in the air can circulate (travel) throughout a large room (office building, restaurant, church/mosque/temple, etc.) and infect people there. **_True _False**
6) To prevent the spread of COVID-19 it is recommended to maintain a *social distance* from other people of *at least 6 feet.* **_True _False**

7) To prevent the spread (transmission) of COVID-9 a person should wear a face mask that *covers the nose and mouth*. **_True _False**

8) If a mask is NOT worn consistently and correctly (*over nose and mouth*), or is too loose, or has large gaps on sides, then *it may not be providing enough protection from COVID-19 transmission* (spreading). **_True _False**

9) Early in the pandemic, *people <u>were NOT told</u> to wear face masks*, because there was a shortage of masks in the U.S.; and medical staff needed the limited supply. **_True _False**

10) *N95 respirator masks* provide the best protection, *surgical masks* provide acceptable protection; and, *NOT recommended are bandanas, scarves, gators, or masks with valves*. **_True _False**

11) Some people have a bad habit of pulling down their face mask to talk; and doing so puts them at risk for the spread of COVID-19. **_True _False**

12) To lower chances of spreading COVID-19 *when visiting with other people, it is recommended to be outdoors, socially distance (staying 6 feet from others who do not live with you), and correctly wear a mask.* **_True _False**

13) It is not safe to spend time indoors/inside restaurants, bars, or for parties, dinners, or any social event with *people not living with you—or not in your "bubble"*—since COVID-19 spreads at such events; they could be *super spreader events*. **_True _False**

14) If someone *must enter a home* who does not live there (e.g. cable worker to fix Internet), they must wear a mask, and all living there must wear a mask until the worker leaves; opening windows and circulating air help reduce the risk. **_True _False**

15) Those at *high risk* for a more severe case of COVID-19 with hospitalization are: *over age 60; or, have lung disease (e.g., asthma), heart disease (e.g., hypertension), diabetes, obesity, HIV/AIDS, or cancer*. **_True _False**

16) To prevent the spread of COVID-19, some people *combine wearing a face mask with also wearing a face shield* when out in public (e.g. going to store). **_True _False**

17) It is wise for people at high risk for a more severe case of COVID-19 [i.e. *over age 60, or with lung disease (e.g., asthma), heart disease (e.g., hypertension), diabetes, etc.]* to wear a *face shield and a mask* when out in public (e.g. going to store). **_True _False**

18) One in five of the people who had COVID-19 also had *anxiety, depression, or insomnia for the first time in their lives*—within 3 months of getting COVID-19*;* and some with COVID-19 are at *higher risk for dementia*. **_True _False**

19) People *already living with a mental illness* (e.g. depression) are at a much higher risk of getting COVID-19 (65% more likely). **_True _False**

20) Black people, Latinos, and Native Americans are much more likely to get COVID-19, to get more severe cases requiring hospitalization, and to die from it—compared to White people. **_True _False**

21) Men are much more likely than women to die from COVID-19. **_True _False**

22) There are *"long-haulers"* (also called "long COVID-19") who still have *one or more ongoing symptoms of COVID-19* after two months or more since first infected; and, women are more likely to be long-haulers. **_True _False**

23) The coronavirus that causes *COVID-19 has been found on surfaces* such as plastic, metal, or cardboard, as well as on money. **_True _False**

24) To prevent the spread of COVID-19 people should *wear disposable hand gloves* to touch things like gas pumps and shopping carts—*or, use hand sanitizer* after touching them. **_True _False**

25) To prevent the spread of COVID-19 people should wash their hands frequently or use hand sanitizer when they cannot wash their hands. **_True _False**

26) If one thinks, *"I only have the sniffles, maybe a cold or the flu,"* they should NOT go to work or be around others, because it could be the very contagious COVID-19. **_True _False**

27) It is important to break the habit of touching one's face, mouth, nose, and eyes to prevent getting infected with COVID-19. **_True _False**

28) Possible symptoms of COVID-19 are fever, dry cough, trouble breathing, fatigue (tired), headaches, body aches, diarrhea, loss of taste or smell—and memory and concentration problems (called "brain fog"). **_True _False**

29) Some adults, adolescents, and children experience very mild or no symptoms of illness when they have COVID-19 (test positive). **_True _False**

30) People who test positive for COVID-19, but *do not have any symptoms of illness* are called *asymptomatic;* and they *can still spread COVID-19* to other people. **_True _False**

31) Symptoms of COVID-19 usually appear *2 to 14 days after exposure* to someone infected with it; this is called the *2- to 14-day incubation period* for the disease; and most people show symptoms by day 5. **_True _False**

32) During the *2- to 14-day incubation period* for COVID-19*,* a person may show no symptoms, but *can still transmit or spread* it to others. **_True _False**

33) The purpose of *isolation* is to separate people *who are sick* with a contagious disease from those people *who are not sick*. **_True _False**

34) Anyone sick with COVID-19 should: *go into isolation for at least 10 days so they remain separate from people who are not sick*; and sleep alone in a separate room without sharing a bathroom or any room/space with others (e.g. kitchen). **_True _False**

35) A person can leave *isolation* after 10 days if they have no fever for at least 24 hours (and took no medication for fever), and other symptoms are improving. **_True _False**

36) When caring for a person with COVID-19 at home, one must: wear a mask, face shield, gloves, and protective covering over clothing; frequently wash and sanitize hands; clean/disinfect items they use (e.g. plates); wash sheets/clothing/towels separate from other laundry); and carefully dispose of (throw out) things like tissues. **_True _False**

37) It was first recommended that anyone exposed to COVID-19 (around someone testing positive for COVID-19) needs a *14-day quarantine period*—to separate themselves and stay away from others *so they do not risk exposing others* to COVID-19. **_True _False**

38) It was later recommended that anyone exposed to COVID-19 (around someone testing positive for COVID-19) needs to complete a *10-day quarantine*; or, they can complete a *7-day quarantine with a negative COVID-19 test result*. **_True _False**

39) *BEFORE seeing <u>in-person</u> someone at high risk for more severe COVID-19* [i.e. over age 60, or with lung disease (e.g., asthma), heart disease (e.g., hypertension), diabetes, etc.] *one should complete a <u>quarantine</u>* (staying home, away from others)*—to reduce chances of spreading COVID-19* to them. **_True _False**

40) Some people think it is enough to show a negative COVID-19 test and have a temperature taken *before* entering an airplane, cruise ship, or home (e.g. holiday dinner), but that is not enough; *all entering needed to have <u>quarantined</u>* to reduce risk.

_True _False

41) A college student or *anyone returning home after being away (or travel) needs to complete a <u>quarantine</u>—BEFORE entering that home*, because they likely had contact with someone with COVID-19. **_True _False**

42) If a college student *<u>DID NOT</u> complete a <u>quarantine</u> BEFORE returning home*, they must *wear a mask at home all the time*—except when eating in a separate room or outside (to maintain social distance)—so no one shares their air. **_True _False**

43) Some people have *caught COVID-19 a second time*, after already having had it; so, *everyone* needs to continue to wear a mask and socially distance. **_True _False**

44) There is hope about vaccines, since *only a very small percentage of people who get the vaccine <u>still get COVID-19</u>*; but that also means that wearing a mask will still be important *even after* wide distribution of a vaccine (until public health experts provide different instructions).

_True _False

Part XI: Diffusion of the Innovation of Our COVID-19 Knowledge Test (DOI-OCKT-1)

[This is a common tool used in prior studies of the Research Group on Disparities in Health (RGDH)—such as Afram (2019). See Afram (2019). Afram, P.S. (2019): *Black men's knowledge of prostate cancer and screening and vitamin D screening and supplementation: Predictors of high self-efficacy to talk to medical providers*. Doctoral dissertation, Teachers College, Columbia University.]]

Thank you for answering the True-False questions in ***Our COVID-19 Knowledge Test*.. ALL answers were TRUE** as a way to inform you about COVID-19.

After this study, we will widely circulate on the internet a link to ***Our COVID-19 Knowledge Test***, as a new way to inform people about COVID-19.

1-Would you recommend that other adults take ***Our COVID-19 Knowledge Test*** to assist them in better coping with the COVID-19 pandemic?
___No=0 ___Yes=1 ___Unsure

Part XII: COVID-19 Knowledge and Self-Efficacy for Risk Reduction Behaviors (C-K-SE-FRRB-4)

[This is a version of tool used in prior studies of the Research Group on Disparities in Health (RGDH), which has been adapted for the present study. See Afram (2019). Afram, P.S. (2019): *Black men's knowledge of prostate cancer and screening and vitamin D screening and supplementation: Predictors of high self-efficacy to talk to medical providers*. Doctoral dissertation, Teachers College, Columbia University.]

Scale 1: COVID-19 Knowledge (Pre- and Post-Test-Taking the *Our COVID-19 Knowledge Test*)

1-BEFORE I answered the above true-false questions, I would **rate what I knew about COVID-19,** as follows:

1-Very Poor	2-Poor	3-Fair	4-Good	5-Very Good	6-Excellent

2-AFTER I answered the above true-false questions, I would **rate what I know NOW about COVID-19,** as follows:

1-Very Poor	2-Poor	3-Fair	4-Good	5-Very Good	6-Excellent

--PAIRED T- TEST COMPARING BEFORE (1) AND NOW (2)

Scale 2: COVID-19 Prevention Self-Efficacy (Pre- and Post-Test-Taking *Our COVID-19 Knowledge Test*)

[NOTE: The POST test-taking self-efficacy is the second study outcome/dependent variables.]

3-BEFORE I answered the above true-false questions, I would **rate my level of confidence for *preventing the spread of COVID-19*,** as follows:
SCORE 1 TO 6

0% Confident	20%	40%	60%	80%	100% Confident

4-AFTER I answered the above true-false questions, I would **rate my level of confidence NOW for *preventing the spread of COVID-19*,** as follows:

0% Confident	20%	40%	60%	80%	100% Confident

--PAIRED T- TEST COMPARING BEFORE (3) AND NOW (4)

Part XIII: Intention to Vaccinate for COVID-19 (IVC-1)

[This is a new tool created for use by the RGDH for pandemic era research, being introduced by Williams-Gunpot (2021) and for use by the RGDH. A dichotomous variable was created for Yes=1 and 0-No, as shown, below.]

1-Will YOU get a COVID-19 vaccination when it becomes available to YOU (e.g. spring or summer of 2021)—or have you already been vaccinated?

__Yes, I will get the vaccine = **1**

__Yes, I already received the vaccine = **1**

__ Probably, after I witness others getting it first, and it seems safe = **1**

__No

__Not Sure

----------END OF SURVEY----------

THANK YOU!

SHARE WITH OTHERS THE LINK THAT LED YOU TO THIS STUDY!

Section 1.07 CLICK ON: https://tinyurl.com/LATINX-ADULTS-INVITED TO TAKE 15 MINUTE SURVEY (if age 18 & up) "About You & COVID-19" for chance to win 1 of 3 $100 Amazon cards. No immigration questions.

If you need immediate assistance, please refer to the following contact information.

You can download this page with contact information for counseling resources, OR SKIP TO THE LINK, BELOW, FOR ENTERING YOUR EMAIL INTO THE LOTTERY DRAWING FOR A CHANCE TO RECEIVE A PRIZE (i.e., 1 of 3 bar coded Amazon gift certificates for $100 each)

1-For Free Texting Crisis Help: https://www.crisistextline.org/

- **You text 741741** when in crisis as a service available 24 hours a day, 7 days a week. You will reach a live trained Crisis Counselor who will respond quickly. The Crisis Counselor helps to move you from a hot moment to a cool calm and safe state, using effective active listening and suggested referrals—all using the Crisis Text Live's secure platform.
- If you have a phone plan with AT&T, T-Mobile, Sprint, or Verizon, texting to 741741 is free of charge.

2-Contact a Crisis Intervention Hotline for Immediate Help and Referrals:

https://www.allaboutcounseling.com/crisis_hotlines.htm

Examples of Crisis Intervention Hotlines:

- If you are in immediate danger, call 911
- National Suicide Hotline: 800-SUICIDE (800-784-2433)
- National Suicide Prevention Lifeline: 800-273-TALK (800-273-8255)
- Grief Recovery Helpline: 800-445-4808

3-Seek Out Top Rated, Low-Cost Online Counseling Services: https://www.e-counseling.com/tlp/therapy-1/?imt=1

- Please see a list of the top rated online counseling services—with the average weekly cost as low as $60.

4-Seek Out Affordable Online Counseling: https://www.betterhelp.com/about/

- Access affordable and convenient online counseling with professionals.

5-Seek Help from the Study Sponsor by E-Mail or Phone: bcw3@tc.columbia.edu **or 267-269-7411 (i.e. the study contact number)**

- You may contact the study sponsor, Dr. Barbara Wallace, receiving help with referrals. Dr. Wallace is a licensed psychologist with experience working with the study population.

Please click here to have a 3 in 250 chance of winning 1 of 3 $100 gift certificates for use on Amazon.com.